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**DEVELOPMENT OF THE
ONTARIO PROVINCIAL
SEDIMENT QUALITY GUIDELINES
FOR THE PCBs AND THE
ORGANOCHLORINE PESTICIDES**

AUGUST 1993

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**HAZARDOUS CONTAMINANTS
COORDINATION BRANCH
135 ST. CLAIR AVENUE WEST
TORONTO, ONTARIO M4V 1P5**

**DEVELOPMENT OF THE ONTARIO
PROVINCIAL SEDIMENT QUALITY GUIDELINES
FOR PCBS AND THE
ORGANOCHLORINE PESTICIDES**

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AUGUST 1993

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PREAMBLE

The Provincial Sediment Quality Guidelines are a set of numerical guidelines developed for the protection of aquatic biological resources. The methods used in setting those guidelines, and the calculation and data evaluation methods are described in detail in Persaud *et al* (1992).

The guidelines set out in this document have defined three levels of ecotoxic effects.

1. A No-Effect Level at which no toxic effects have been observed on aquatic organisms. This is the level at which all biological resources will be protected. Other water quality and use guidelines will also be met at this level. This level is also intended to protect against biomagnification through the food chain.
2. A Lowest Effect Level indicating a level of sediment contamination at which the majority of benthic organisms are unaffected.
3. A Severe Effect Level indicating the level at which pronounced disturbance of the sediment-dwelling community can be expected. This is the sediment concentration of a compound that would be detrimental to the majority of benthic species.

The No-Effect Level guideline is calculated on the basis of the Equilibrium Partitioning method described in Persaud *et al* (1992). The method uses Provincial Water Quality Objectives/Guidelines, which have been designed to protect against biomagnification as well as all other sensitive water uses. A guideline is derived by multiplying the PWQO or PWQG by organic carbon-normalized partition coefficients (K_{oc}) to derive a sediment guideline. The mean of these values becomes the No-Effect Level.

Both the Lowest Effect Level and the Severe Effect Level guideline levels are derived using the Screening Level Concentration method

described in Persaud *et al* (1992). The SLC method makes use of field data on sediment concentrations of contaminants and the co-occurrence of benthic invertebrate species. The calculation of the SLC is a two step process and is calculated separately for each parameter. In the first step, for each parameter the individual SLCs (termed Species SLCs) are calculated for each of the benthic species. The sediment concentrations at all locations at which that species was present are plotted in order of increasing concentration. From this plot, the 90th percentile of this concentration distribution is determined. The 90th percentile was chosen to provide a conservative estimate of the tolerance range for that species. This would serve to eliminate extremes in concentrations that may be due to specific and unusual sediment characteristics. The 90th percentile is that locus below which 90 percent of the sediment concentrations fall.

In the second step, the 90th percentiles for all of the species present are plotted, also in order of increasing concentration. From this plot, the 5th percentile and the 95th percentile are calculated. These represent the concentrations below which 5 percent and 95 percent of the concentrations fall. The concentration of a contaminant at the 5th percentile becomes the Lowest Effect Level while the concentration at the 95th percentile becomes the Severe Effect Level.

This document details the derivation of the Provincial Sediment Quality Guidelines for PCBs and the organochlorine compounds, and summarizes the data used to derive these values. The document also summarizes the fate of the organochlorine pesticides and PCBs in sediments and provides the necessary details of the calculations of the sediment quality guidelines.

INTRODUCTION

PCBs and the organochlorine pesticides are not naturally occurring compounds; their presence in sediments is due entirely to anthropogenic sources. The sources can be through direct input into water, as in the case of effluent discharges from manufacturing, or through indirect losses, such as non-point source runoff. The latter has been especially significant in the case of the organochlorine pesticides where aerial application has been common practice. Many of these compounds are so

persistent and pervasive that atmospheric inputs can be considerable.

The ultimate fate of most of these compounds in aquatic systems is complexing to ligands and deposition in the sediments. The relative length of time that a compound remains in solution depends on its solubility and hydrophobicity. Highly insoluble compounds can rapidly partition to organic particles and settle to the sediments while the more water soluble compounds may remain in solution for longer periods of time. The solubility, therefore, has a direct bearing on the ultimate fate of a compound, with the more soluble compounds generally lost more readily from solution, through volatilization and transformation, than the insoluble compounds.

The remainder of this document describes the fate of each of the compounds in the aquatic system and details the derivation of the No-Effect Levels, the Lowest Effect Levels and the Severe Effect Levels.

ALDRIN

i. Aquatic Fate

Aldrin is a hexachloro compound formulated for use as a pest control agent. While originally used for control of soil, fruit and vegetable pests, its use is currently restricted to ground injection for termite control (CCREM 1987).

The major pathways to the aquatic environment are through sediment transport of eroded soil. Rainfall and snowfall can also contribute trace amounts.

Solubility of aldrin in water is very low and aldrin is expected to rapidly partition to organic matter. The persistence of aldrin in the environment is affected by its rapid biotransformation, through epoxidation, to dieldrin, which is highly stable in aquatic systems (Smith *et al* 1988).

Aldrin can be bioaccumulated by aquatic organisms, though biomagnification is not likely to be significant due to the rapid transformation to dieldrin.

ii. Sediment Guidelines

No-Effect Level

The No-Effect Level guideline for aldrin based on the equilibrium partitioning approach could not be calculated since only one partition coefficient for aldrin was available ($\log K_{oc} = 6.02$) (OMOE 1987).

Lowest Effect Level

The Lowest Effect Level for aldrin was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for Aldrin was calculated on the basis of sediment concentrations from 117 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.001 $\mu\text{g/g}$ to 0.01 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 39 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) for each species are presented in Table 1. A detailed plot of the SLC is provided in Figure 1.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.002 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic-carbon normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline, which are presented in Table 1. Figure 1 also shows the 95th percentile of the Species SLC distribution.

The 95th percentile of the organic-carbon normalized SLC plot is calculated as 8.4 $\mu\text{g/g}$ of organic carbon, which is rounded to 8 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline, this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied. For example, a sediment TOC content of 5% results in a bulk sediment guideline of 8 $\mu\text{g/g}$ O.C. \times 0.05

or 0.42 $\mu\text{g/g}$.

Since the sediment concentrations used in the calculations covered only a narrow range, the guidelines derived by the SLC method must be considered as conservative.

BENZENE HEXACHLORIDE (BHC)

i. Aquatic Fate

BHC refers to a number of mixed isomers of hexachlorocyclohexane, of which the γ -isomer, lindane, is the only significant insecticide. Lindane has been used to control domestic, commercial, agricultural, silvicultural and livestock insect pests. The other isomers occur mainly as by-products of chemical manufacturing processes.

Sources to the environment are from industrial discharges and agricultural runoff. Atmospheric transport and deposition has ensured that these compounds occur even in remote areas.

Solubility in water is relatively high for lindane, and much of the compound can remain in the water column for extended periods of time. The partition coefficient has been measured as 3.7 ($\log K_{ow}$) (Smith *et al* 1987) and suggests that lindane can sorb to organic matter and settle in this matrix. Though lindane does not partition strongly to sediment organic matter, it is relatively bioaccumulable, especially from the water column. Bioaccumulation factors have been measured at around 100 (Smith *et al* 1988).

Transformation (dechlorination) can occur in the sediments, particularly under anaerobic conditions.

ii. Sediment Guidelines

Total BHC

No-Effect Level

No PWQOs/Gs were available to calculate a No-Effect Level for total BHC.

Lowest Effect Level

The Lowest Effect Level for total BHC was calculated as the 5th percentile of the Species

Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for total BHC was calculated on the basis of sediment concentrations from 171 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.001 $\mu\text{g/g}$ to 0.145 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 67 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 2. A detailed plot of the SLC is provided in Figure 2.

The 5th percentile of the organic-carbon normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.003 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic-carbon normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline, which are presented in Table 2. Figure 2 also shows the 95th percentile of the Species SLC distribution.

The 95th percentile of the organic-carbon normalized SLC plot is calculated as 11.8 $\mu\text{g/g}$ of organic carbon which is rounded to 12 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline, this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

α -BHC

No-Effect Level

No PWQOs were available to calculate guidelines for α -BHC by the partitioning method.

Lowest Effect Level

The Lowest Effect Level for α -BHC was calculated as the 5th percentile of the Species

Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for α -BHC was calculated on the basis of sediment concentrations from 39 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.001 $\mu\text{g/g}$ to 0.04 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 26 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 2a. A detailed plot of the SLC is provided in Figure 2a.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.006 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic-carbon normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 2a. Figure 2a also shows the 95th percentile of the Species SLC distribution.

The 95th percentile of the organic-carbon normalized SLC plot is calculated as 10.3 $\mu\text{g/g}$ of organic carbon which is rounded to 10 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline, this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied. For example, a sediment TOC content of 5% results in a bulk sediment guideline of 10 $\mu\text{g/g}$ O.C. \times 0.05 or 0.5 $\mu\text{g/g}$.

β -BHC

No-Effect Level

No PWQOs were available to calculate guidelines for β -BHC by the partitioning method.

Lowest Effect Level

The Lowest Effect Level for β -BHC was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for β -BHC was calculated on the basis of sediment concentrations from 83 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.001 $\mu\text{g/g}$ to 0.145 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 25 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 2b. A detailed plot of the SLC is provided in Figure 2b.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.005 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level Concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 2b. Figure 2b also shows the 95th percentile of the Species SLC distribution.

The 95th percentile of the organic carbon-normalized SLC plot is calculated as 21 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

γ -BHC

No-Effect Level

The available partition coefficients (mean of $\log K_{oc}$ was 3.35) were used to calculate the No-Effect Level guideline. The mean of the calculated guidelines, using the existing PWQO of 0.01 $\mu\text{g/L}$ and converted to a bulk sediment basis assuming a

limit of 1% sediment TOC, was 0.0002 $\mu\text{g/g}$.

Lowest Effect Level

The Lowest Effect Level for γ -BHC was calculated as the 10th percentile of the Species Screening Level Concentrations (SSLCs) since the limited database precluded the use of the 5th percentile. Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for γ -BHC was calculated on the basis of sediment concentrations from 46 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.001 $\mu\text{g/g}$ to 0.011 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 15 species, these guidelines must be regarded as tentative. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 2c. A detailed plot of the SLC is provided in Figure 2c.

Due to insufficient data to calculate the 5th percentile, the 10th percentile of the organic carbon-normalized SLC was calculated. The 10th percentile, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.003 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 90th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 2c. Figure 2c also shows the 90th percentile of the Species SLC distribution.

The limited size of the database precluded the calculation of the 95th percentile of the SSLC distributions. The Severe Effect Level is therefore based on the 90th percentile of the organic carbon-normalized SLC plot, which was calculated as 0.9 $\mu\text{g/g}$ of organic carbon which is rounded to 1.0 $\mu\text{g/g}$ of organic carbon and this value must also be regarded as tentative. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to

which the guideline is being applied. While the use of the 90th percentile gives a conservative value, this is warranted, given the restricted database.

The low value as compared to the other BHC isomers is likely due to the limited concentration range in the database from which this value was calculated and the limited size of the database. The Lowest Effect Level and the Severe Effect Level for this isomer should be regarded as tentative until additional data becomes available.

TOTAL CHLORDANE

i Aquatic Fate

Chlordane is an octachloro compound that occurs in a mixture of isomers, mainly α -Chlordane and γ -Chlordane. It has been formulated as an insecticide and has, in the past, been used for agricultural pest control and for control of wood-boring insects in structures. At present it is used only in the control of subterranean insects.

Sources to the aquatic environment are mainly through pesticide application to crops and losses related to the manufacturing process.

In water, sorption to organic matter and volatilization in the absence of organic matter appear to be the most important processes. OMOE (1988) noted partition coefficients ($\log K_{oc}$) ranging from 2.99 to 4.89 with a mean of 3.94. Smith *et al* 1988 noted a partition coefficient ($\log K_{ow}$) of 5.48. Sediment accumulation is likely to be a significant fate, given the affinity for organic matter.

Bioaccumulation factors were in the order of 1,000 to 10,000 suggesting that bioaccumulation can be significant. Though little appears to be known about biomagnification, chlordane in mammalian systems can be transformed and stored in tissues as oxychlordane, a toxic metabolite of chlordane.

ii Sediment Guidelines

No-Effect Level

The available partition coefficients (mean of $\log K_{oc}$ was 3.94) were used to calculate the No-Effect Level guideline. The mean of the calculated guidelines, using the existing PWQO of 0.06 $\mu\text{g/L}$ and converted to a bulk sediment basis assuming a

limit of 1% sediment TOC, was 0.005 $\mu\text{g/g}$.

Lowest Effect Level

The Lowest Effect Level for chlordane was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for chlordane was calculated on the basis of sediment concentrations from 140 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.001 $\mu\text{g/g}$ to 0.048 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 56 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 3. A detailed plot of the SLC is provided in Figure 3.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.007 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 3. Figure 3 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as 5.9 $\mu\text{g/g}$ of organic carbon which is rounded to 6 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

Both the Lowest Effect Level and the Severe Effect Level are likely to be conservative given the restricted concentration range sampled.

DDT

i Aquatic Fate

DDT (1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane) occurs primarily as two isomers; p,p'-DDT and o,p'-DDT. It is a broad spectrum insecticide that has seen world-wide use since its commercial production began in the early 1940's.

The major sources are through direct release to water bodies in effluent from manufacturing, or as a result of aerial deposition through application.

Both DDT isomers are insoluble in water and their aquatic fate is usually adsorption to organic matter with subsequent deposition in the sediments. They also demonstrate a high affinity for animal lipids. Volatilization can also be relatively high as a result of the low water solubility, especially where organic content of the water is low. Partition coefficients for DDT are high. Smith *et al* (1988) give a value of $\log K_{ow} = 6.36$ for p,p'-DDT, while OMOE (1988) give a mean of $\log K_{oc} = 5.92$ for DDT.

Due to its solubility in lipids, DDT is bioaccumulated and concentrated at all trophic levels and can be biomagnified as well. Bioconcentration factors range from 10,000 to 1,000,000 (Smith *et al* 1988; CCREM 1987).

ii Sediment Guidelines

Total DDT (DDT and metabolites)

No-Effect Level

A No-Effect level was not calculated for DDT since the PWQO for DDT is currently under revision. When the revised values are available the No-Effect Level will be derived.

Lowest Effect Level

The Lowest Effect Level for total DDT was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for DDT was calculated on the basis of sediment concentrations from 561 locations

in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.0005 $\mu\text{g/g}$ to 6.030 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 83 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 4. A detailed plot of the SLC is provided in Figure 4.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.007 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level Concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 4. Figure 4 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as 11.8 $\mu\text{g/g}$ of organic carbon which is rounded to 12 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

DDT (p,p'-DDT and o,p'-DDT)

No-Effect Level

Since no PWQOs exist for the individual isomers of DDT a No-Effect Level could not be calculated.

Lowest Effect Level

The Lowest Effect Level for o,p' + p,p' DDT was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for DDT (including the isomers

o,p'-DDT and p,p'-DDT) was calculated on the basis of sediment concentrations from 202 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.0005 $\mu\text{g/g}$ to 6.030 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 51 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 4a. A detailed plot of the SLC is provided in Figure 4a.

The 5th percentile of the organic carbon-normalized SLC for DDT, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.008 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution for each isomer. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 4a. Figure 4a also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level for DDT is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as 70.9 $\mu\text{g/g}$ of organic carbon which is rounded to 71 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

DDD

i Aquatic Fate

DDD (1,1-dichloro-2,2-bis(4-chlorophenyl)ethane) occurs principally as the isomer p,p'-DDD. Though used in the past as a pesticide, it most commonly appears as a contaminant in formulations of DDT.

The uses, and environmental pathways, are the same as for DDT. In the aquatic environment,

DDD, like DDT has a low solubility, which results in significant amounts being sorbed to organic matter. DDD is also soluble in animal lipids. A partition coefficient of 5.99 ($\log K_{ow}$) has been reported by the EPA (CCREM 1987).

Bioconcentration factors range from 1,000 to 100,000.

ii Sediment Guidelines

No-Effect Level

Since no PWQOs exist for DDD, a No-Effect Level could not be calculated.

Lowest Effect Level

The Lowest Effect Level for DDD was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for p,p'-DDD was calculated on the basis of sediment concentrations from 118 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.002 $\mu\text{g/g}$ to 0.06 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 30 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 5. A detailed plot of the SLC is provided in Figure 5.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.008 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 5. Figure 5 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the

95th percentile of the organic carbon-normalized SLC plot, which was calculated as 6.0 $\mu\text{g/g}$. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied. Since the sediment concentrations did not span a wide concentration range, these values must be considered as conservative.

DDE

i Aquatic Fate

DDE is the primary metabolite of DDT and is formed by the dechlorination of DDT.

DDE is also sparingly soluble in water and most sorbs to organic matter and settles to the sediments. Like DDT, it is soluble in animal lipids. A partition coefficient of 5.69 ($\log K_{ow}$) has been reported for the p,p'-DDE isomer (Smith *et al* 1988).

Bioconcentration factors of 12,000 have been reported in fish (Smith *et al* 1988).

ii Sediment Guidelines

No-Effect Level

Since no PWQOs exist for DDE a No-Effect Level could not be calculated.

Lowest Effect Level

The Lowest Effect Level for DDE was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for p,p'-DDE was calculated on the basis of sediment concentrations from 241 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.001 $\mu\text{g/g}$ to 0.057 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 72 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level

Concentration (SSLC) are presented in Table 6. A detailed plot of the SLC is provided in Figure 6.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as $0.005 \mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 6. Figure 6 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as $18.6 \mu\text{g/g}$ of organic carbon which is rounded to $19 \mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied. Since the sediment concentrations used in the calculations did not span a wide concentration range, these values must be considered as conservative.

DIELDRIN

i Aquatic Fate

Dieldrin is a hexachloro compound formulated for use as a pest control agent. It has been used for domestic and agricultural insect pest control. Dieldrin can also be formed in the environment as a result of the metabolism of aldrin by microorganisms.

Major pathways to aquatic systems are through manufacture and application of both dieldrin and aldrin, though in the latter case, this occurs mainly through runoff of sediment/eroded particles. Due to its low water solubility, dieldrin readily sorbs to organic matter.

Bioaccumulation factors of 1,000 to 10,000 have been observed (Smith *et al* 1988, CCREM 1987).

ii Sediment Guidelines

No-Effect Level

The available partition coefficients (mean of $\log K_{oc}$ was 4.84) were used to calculate the No-Effect Level guideline. The mean of the calculated guidelines, using the existing PWQO of $0.001 \mu\text{g/L}$ and converted to a bulk sediment basis assuming a limit of 1% sediment TOC, was $0.0006 \mu\text{g/g}$.

Lowest Effect Level

The Lowest Effect Level for dieldrin was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for dieldrin was calculated on the basis of sediment concentrations from 279 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from $0.001 \mu\text{g/g}$ to $11.6 \mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 81 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 7. A detailed plot of the SLC is provided in Figure 7.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as $0.002 \mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 7. Figure 7 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as $91 \mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline, this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

ENDRIN

i Aquatic Fate

Endrin is a hexachloro compound used as a foliar insecticide for the control of agricultural pests.

Sources to aquatic systems are primarily through application as a pesticide. The low solubility and high partition coefficient ($\log K_{oc} = 3.59$ to 5.6) favour the sorption of endrin to organic matter and accumulation in the sediments. Photolysis and volatilization do not appear to be major processes governing the fate of endrin.

Bioaccumulation appears to be a significant fate, with reported bioconcentration factors of 1000 to 10,000 (CCREM 1987).

ii Sediment Guidelines

No-Effect Level

The available partition coefficients (mean of $\log K_{oc}$ was 4.36) were used to calculate the No-Effect Level guideline. The mean of the calculated guidelines, using the existing PWQO of $0.002 \mu\text{g/L}$ and converted to a bulk sediment basis assuming a limit of 1% sediment TOC, was $0.0005 \mu\text{g/g}$.

Lowest Effect Level

The Lowest Effect Level for endrin was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for endrin was calculated on the basis of sediment concentrations from 136 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from $0.002 \mu\text{g/g}$ to $0.295 \mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 35 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 8. A detailed plot of the SLC is provided in Figure 8.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as $0.003 \mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 8. Figure 8 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as $127.5 \mu\text{g/g}$ of organic carbon which is rounded to $130 \mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

HEXACHLOROBENZENE (HCB)

i Aquatic Fate

HCB occurs primarily as a waste product of chemical manufacturing. It has also been used in the past as a fungicide (CCREM 1987).

Most chlorinated benzenes are hydrophobic compounds with high partition coefficients. The reported value for HCB is 5.5 ($\log K_{ow}$). While volatilization of most chlorinated benzenes is the principal removal mechanism from water, HCB can sorb to organic matter and settle to the sediments.

Due to its solubility in lipids, HCB is also expected to accumulate in organism tissues. Little information is available on biomagnification.

ii Sediment Guidelines

No-Effect Level

The available partition coefficients (mean of $\log K_{oc}$ was 6.31) were used to calculate the No-Effect Level guideline. The mean of the calculated guidelines, using the existing PWQO of $0.00065 \mu\text{g/L}$ and converted to a bulk sediment basis assuming a limit of 1% sediment TOC, was 0.01

µg/g.

Lowest Effect Level

The Lowest Effect Level for HCB was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for HCB was calculated on the basis of sediment concentrations from 240 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.0005 µg/g to 0.150 µg/g. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 81 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 9. A detailed plot of the SLC is provided in Figure 9.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.02 µg/g.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 9. Figure 9 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as 24 µg/g of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

HEPTACHLOR

i Aquatic Fate

Heptachlor has been used as an agricultural

and domestic pesticide. Its principal sources to aquatic systems is through application as a pesticide.

Hydrolysis and sorption to particulate matter and sediment deposition appear to be the principal fates in water due to the low water solubility (Log K_{oc} = 3.59 to 5.34).

Bioaccumulation is also significant with bioconcentration factors of 10,000 reported (CCREM 1987).

ii Sediment Guidelines

No-Effect Level

The available partition coefficients (mean of log K_{oc} was 4.46) were used to calculate the No-Effect Level guideline. The mean of the calculated guidelines, using the existing PWQO of 0.001 µg/L and converted to a bulk sediment basis assuming a limit of 1% sediment TOC, was 0.0003 µg/g.

Lowest Effect Level and Severe Effect Level

Due to the limited concentration range sampled and the small size of the database, Screening Level Concentrations could not be reliably calculated for heptachlor. These will be developed as additional data becomes available.

HEPTACHLOR EPOXIDE

i Aquatic Fate

In North America, heptachlor epoxide is used as a pesticide for agricultural uses. However, it is not registered for use in Canada.

Sources to aquatic systems are primarily through application as a pesticide. Hydrolysis does not appear to be a major fate and sorption and bioaccumulation appear to be the principal reservoirs.

ii Sediment Guidelines

No-Effect Level

Since no K_{ow} values could be found for heptachlor epoxide a No-Effect Level could not be calculated.

Lowest Effect Level

The Lowest Effect Level for heptachlor epoxide was calculated as the 10th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for heptachlor epoxide was calculated on the basis of sediment concentrations from 134 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.0005 $\mu\text{g/g}$ to 0.045 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 26 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 10. A detailed plot of the SLC is provided in Figure 10.

The available data was insufficient to calculate the 5th percentile of the SLC distribution and therefore, the 10th percentile of the SLC distribution was used to arrive at the Lowest Effect Level. As a result, the value derived must be regarded as tentative. The organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.005 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 90th percentile of the organic carbon-normalized Species Screening Level concentration distribution since insufficient data were available to calculate the 95th percentile. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 10. Figure 10 also shows the 90th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 90th percentile of the organic carbon-normalized SLC plot, which was calculated as 5 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

MIREX

j Aquatic Fate

Mirex is a dodecachlorinated compound that in the past has been used as a pest control agent in the southern United States and also as an additive in plastics, paints, rodenticides and antioxidants (CCREM 1987).

The principal source to the environment has been through the manufacturing process, which accounts for the restricted distribution.

Mirex is relatively insoluble in water with sorption to organic matter (including lipids) and bioaccumulation being the predominant fates (CCREM 1987).

ii Sediment Guidelines

No-Effect Level

Since no PWQOs exist for mirex a No-Effect Level could not be calculated.

Lowest Effect Level

The Lowest Effect Level for mirex was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for mirex was calculated on the basis of sediment concentrations from 141 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.005 $\mu\text{g/g}$ to 0.985 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 52 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 11. A detailed plot of the SLC is provided in Figure 11.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.007 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 11. Figure 11 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as 128 $\mu\text{g/g}$ of organic carbon which is rounded to 130 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

POLYCHLORINATED BIPHENYLS (PCBs)

i Aquatic Fate

PCBs have been used in heat-transfer fluids, hydraulic fluids, solvent extenders, plasticizers, dielectric fluids, as flame retardants, additives, waterproofing agents, paints, surface coatings, adhesives, printing inks and pesticide extenders.

Principal sources to the aquatic environment are through atmospheric deposition (through incomplete combustion), through sewage, losses of lubricants and other fluids, and leachate from dumps and landfills.

PCBs are highly persistent, stable compounds. Their solubility in water is low, and decreases with increasing chlorine substitution. Sorption to sediment matter is the predominant fate in aquatic systems ($\log K_{ow}$ ranges from 3.76 to 8.26, depending on the degree of chlorination) (CCREM 1987).

The solubility of PCBs in lipids accounts for their accumulation and biomagnification in animal tissues. Bioconcentration factors of 2,000 to 200,000 have been reported (Smith *et al* 1988, CCREM 1987).

ii Sediment Guidelines

No-Effect Level

The available partition coefficients (mean

of $\log K_{oc}$ was 6.14) were used to calculate the No-Effect Level guideline. The mean of the calculated guidelines, using the existing PWQO of 0.001 $\mu\text{g/L}$ and converted to a bulk sediment basis assuming a limit of 1% sediment TOC, was 0.01 $\mu\text{g/g}$.

Lowest Effect Level

The Lowest Effect Level for total PCBs was calculated as the 5th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for total PCBs was calculated on the basis of sediment concentrations from 660 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.01 $\mu\text{g/g}$ to 7.310 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 85 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 12. A detailed plot of the SLC is provided in Figure 12.

The 5th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.07 $\mu\text{g/g}$.

Severe Effect Level

The Severe Effect Level has been calculated as the 95th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 12. Figure 12 also shows the 95th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 95th percentile of the organic carbon-normalized SLC plot, which was calculated as 529.6 $\mu\text{g/g}$ of organic carbon which is rounded to 530 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

PCB 1254

No-Effect Level

No PWQOs were available for calculation of a No-Effect Level guideline for this Arochlor.

Lowest Effect Level

The Lowest Effect Level for PCB 1254 was calculated as the 10th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for PCB 1254 was calculated on the basis of sediment concentrations from 78 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.01 $\mu\text{g/g}$ to 1.600 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 13 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 12a. A detailed plot of the SLC is provided in Figure 12a.

Since insufficient data were available to calculate the 5th percentile, the 10th percentile was calculated. The 10th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.06 $\mu\text{g/g}$.

Severe Effect Level

Due to the limited size of the database only the 90th percentile of the SSLC distributions could be calculated. Therefore, the Severe Effect Level has been calculated as the 90th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 12a. Figure 12a also shows the 90th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 90th percentile of the organic carbon-normalized SLC plot, which was calculated as 34 $\mu\text{g/g}$ of

organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

Both the Lowest Effect Level and the Severe Effect Level for this and all other PCB Arochlors must be regarded as tentative given the small size of the database from which the values were calculated.

PCB 1016

No-Effect Level

No PWQOs were available for calculation of a No-Effect Level guideline.

Lowest Effect Level

The Lowest Effect Level for PCB 1016 was calculated as the 10th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for PCB 1016 was calculated on the basis of sediment concentrations from 78 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.014 $\mu\text{g/g}$ to 7.000 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 13 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 12b. A detailed plot of the SLC is provided in Figure 12b.

Since insufficient data were available to calculate the 5th percentile, the 10th percentile was obtained. The 10th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.007 $\mu\text{g/g}$.

Severe Effect Level

Due to the limited size of the database only the 90th percentile of the SSLC distributions could be calculated. Therefore, the Severe Effect Level

has been calculated as the 90th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 12b. Figure 12b also shows the 90th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 90th percentile of the organic carbon-normalized SLC plot, which was calculated as 53 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

PCB 1248

No-Effect Level

No PWQOs were available for calculation of a No-Effect Level guideline.

Lowest Effect Level

The Lowest Effect Level for PCB 1248 was calculated as the 10th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for PCB 1248 was calculated on the basis of sediment concentrations from 78 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.01 $\mu\text{g/g}$ to 6.450 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 13 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 12c. A detailed plot of the SLC is provided in Figure 12c.

Since insufficient data were available to calculate the 5th percentile, the 10th percentile was obtained. The 10th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.03 $\mu\text{g/g}$.

Severe Effect Level

Due to the limited size of the database only the 90th percentile of the SSLC distributions could be calculated. Therefore, the Severe Effect Level has been calculated as the 90th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 12c. Figure 12c also shows the 90th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 90th percentile of the organic carbon-normalized SLC plot, which was calculated as 150 $\mu\text{g/g}$ of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

PCB 1260

No-Effect Level

No PWQOs were available for calculation of a No-Effect Level guideline.

Lowest Effect Level

The Lowest Effect Level for PCB 1260 was calculated as the 10th percentile of the Species Screening Level Concentrations (SSLCs). Each SSLC is the calculated 90th percentile of the concentration distribution for that species. The Screening Level Concentration (SLC) is a plot of the concentration distribution of all the SSLCs for that compound, and for PCB 1260 was calculated on the basis of sediment concentrations from 79 locations in and adjacent to the Great Lakes region. The sediment concentrations ranged from 0.01 $\mu\text{g/g}$ to 1.482 $\mu\text{g/g}$. Sediment concentrations were normalized to the actual sediment organic carbon content (as denoted by TOC) before calculations were undertaken. Species Screening Level Concentrations were calculated for 13 species. The actual species used in the calculation, the concentration mean and range, and the 90th percentile of the Species Screening Level Concentration (SSLC) are presented in Table 12d. A detailed plot of the SLC is provided in Figure 12d.

Since insufficient data were available to calculate the 5th percentile, the 10th percentile was

obtained. The 10th percentile of the organic carbon-normalized SLC, converted to a bulk sediment concentration assuming a limit of 1% sediment TOC concentration, is calculated as 0.005 µg/g.

Severe Effect Level

Due to the limited size of the database only the 90th percentile of the SSLC distributions could be calculated. Therefore, the Severe Effect Level has been calculated as the 90th percentile of the organic carbon-normalized Species Screening Level concentration distribution. The data used are the same as for the Lowest Effect Level Guideline which are presented in Table 12d. Figure 12d also shows the 90th percentile of the Species SLC distribution.

The Severe Effect Level is based on the 90th percentile of the organic carbon-normalized SLC plot, which was calculated as 24 µg/g of organic carbon. To arrive at the bulk sediment Severe Effect Level guideline this value is multiplied by the actual TOC content of the sediments to which the guideline is being applied.

RESEARCH NEEDS

It is apparent that in some cases, limitations of the data have precluded the use of some of the methods in calculating the guidelines. In a number of cases either K_{ow} values, or PWQOs/Gs were not available for calculation of No-Effect Levels. In addition, the SLC method described in the Protocol requires that the full tolerance range for each species be sampled and that the data for the species is not biased towards lightly or heavily contaminated areas. It has not been possible in all cases to satisfy these requirements. In particular, the concentrations for some of the compounds were generally rather low, often with levels in the sediments below the analytical detection limits. In many cases where sediment concentrations were high, only a few benthic invertebrate species were present, most likely due to other factors such as a high level of organic matter. Therefore, the guideline numbers in some cases may be rather conservative, though this should change as additional data is added to the database.

This points to the necessity for future effort to be directed towards incorporating additional data, particularly data from highly contaminated sites. There is also a need to concentrate efforts towards

sediment bioassay procedures to verify the results of the SLC process.

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APPENDIX I - TABLES

Species Screening Level Calculations

Explanation of Abbreviations:

- N=** - Number of observations used for the calculation of the SSLC.
- Mean** - Mean concentration (dry weight and organic carbon normalized) at sites at which the species was present.
- %** - Percentile at which the concentration is calculated.
- Conc.** - Organic carbon normalized concentration (dry weight) of the contaminant at the percentile noted.
- .** - Insufficient number of observations to calculate percentiles.

Table 1: ALDRIN - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	13	0.42	0.28	0.03	0.825	90	0.8
2	Aelosoma sp	2	0.046	0.052	0.01	0.083	90	.
3	Amnicola limosa	4	0.145	0.13	0.006	0.314	90	.
4	Asellus sp	15	0.927	1.769	0.121	6.579	90	4.686
5	Aulodrilus limnobius	2	0.018	0.016	0.006	0.03	90	.
6	Aulodrilus pigueti	1	0.019		0.019	0.019	90	.
7	Aulodrilus pleuriseta	8	0.055	0.053	0.006	0.122	90	.
8	Bithynia tentaculata	10	0.236	0.144	0.006	0.556	90	0.531
9	Branchiura sowerbyi	6	0.182	0.037	0.121	0.23	90	.
10	Caenis sp	4	0.223	0.17	0.01	0.417	90	.
11	Ceraclea sp	0						
12	Chaetogaster diaphanus	14	0.154	0.12	0.03	0.5	90	0.389
13	Cheumatopsyche sp	0						
14	Chironomus sp	31	1.731	6.86	0.102	38.462	90	2.282
15	Cladopelma sp	3	0.288	0.2	0.102	0.5	90	.
16	Cladotanytarsus sp	3	0.206	0.063	0.161	0.278	90	.
17	Coelotanypus sp	5	0.236	0.058	0.185	0.303	90	.
18	Cricotopus sp	20	1.305	2.707	0.011	9.091	90	8.374
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	31	0.239	0.172	0.063	0.893	90	0.47
21	Dicrotendipes sp	8	0.249	0.164	0.072	0.607	90	.
22	Eukiefferiella sp	0						
23	Gammarus fasciatus	44	1.266	5.782	0.006	38.462	90	1.933
24	Glossiphonia heteroclita	1	0.235		0.235	0.235	90	.
25	Glossosoma sp	3	0.648	0.16	0.513	0.825	90	.
26	Glyptotendipes sp	6	0.227	0.109	0.154	0.446	90	.
27	Gyraulius parvus	4	0.145	0.046	0.096	0.2	90	.
28	Helisoma anceps	3	0.283	0.214	0.072	0.5	90	.
29	Heterotrissocladius sp	7	0.095	0.064	0.01	0.208	90	.
30	Hyaella azteca	14	2.848	3.574	0.122	9.091	90	9.091
31	Hydropsyche sp	0						
32	Hydroptila sp	1	0.5		0.5	0.5	90	.
33	Ilyodrilus templetoni	0						
34	Limnodrilus hoffmeisteri	20	0.114	0.113	0.006	0.5	90	0.268
35	Limnodrilus sp	59	1.32	4.982	0.111	38.462	90	2.193
36	Limnodrilus udekemianus	4	0.274	0.302	0.089	0.725	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	4	0.171	0.065	0.083	0.235	90	.
39	Microtendipes sp	10	0.222	0.121	0.143	0.556	90	0.524
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	8	0.133	0.043	0.072	0.208	90	.
43	Nais variabilis	17	0.17	0.118	0.011	0.5	90	0.322
44	Nanocladius sp	0						
45	Neureclipsis sp	0						
46	Oecetis sp	13	0.246	0.13	0.122	0.556	90	0.524
47	Parachironomus sp	10	0.112	0.066	0.01	0.208	90	0.205
48	Paralauterborniella sp	3	0.154	0.107	0.083	0.278	90	.
49	Paratendipes sp	8	0.136	0.114	0.006	0.278	90	.
50	Phaenopsectra sp	5	0.521	0.264	0.072	0.725	90	.
51	Phallodrilus sp	0						
52	Physella gyrina	5	0.109	0.083	0.01	0.227	90	.

53	<i>Piguetiella michiganensi</i>	15	0.162	0.062	0.083	0.278	90	0.278
54	<i>Pisidium casertanum</i>	24	0.119	0.1	0.01	0.5	90	0.218
55	<i>Pisidium compressum</i>	5	0.062	0.074	0.006	0.161	90	.
56	<i>Pisidium conventus</i>	13	0.14	0.129	0.01	0.5	90	0.395
57	<i>Pisidium fallax</i>	3	0.132	0.042	0.096	0.179	90	.
58	<i>Pisidium henslowanum</i>	19	0.093	0.061	0.006	0.227	90	0.179
59	<i>Pisidium lilljeborgi</i>	16	0.504	1.621	0.006	6.579	90	2.133
60	<i>Pisidium nitidum</i>	10	0.13	0.076	0.019	0.296	90	0.284
61	<i>Pisidium variabile</i>	18	0.117	0.119	0.006	0.5	90	0.264
62	<i>Pleurocera acuta</i>	0						
63	<i>Polypedium scalaenum</i>	13	0.2	0.116	0.083	0.5	90	0.411
64	<i>Polypedium sp</i>	21	0.473	0.349	0.111	1.563	90	0.873
65	<i>Pontoporeia hoyi</i>	23	0.103	0.056	0.006	0.238	90	0.172
66	<i>Potamothrix moldaviensis</i>	19	0.097	0.051	0.01	0.208	90	0.161
67	<i>Potamothrix vejdoskyi</i>	19	0.112	0.112	0.01	0.5	90	0.278
68	<i>Pristina foreli</i>	0						
69	<i>Pristina osborni</i>	0						
70	<i>Procladius sp</i>	60	0.589	0.818	0.006	3.425	90	1.902
71	<i>Prostoma rubrum</i>	9	0.15	0.139	0.01	0.5	90	.
72	<i>Pseudocloeon sp</i>	0						
73	<i>Quistadrilus multisetosus</i>	2	0.02	0.015	0.01	0.03	90	.
74	<i>Slavina appendiculata</i>	4	0.155	0.231	0.019	0.5	90	.
75	<i>Specaria josinae</i>	3	0.066	0.084	0.006	0.161	90	.
76	<i>Sphaerium nitidum</i>	12	0.094	0.054	0.006	0.161	90	0.158
77	<i>Sphaerium striatinum</i>	2	0.051	0.063	0.006	0.096	90	.
78	<i>Spirosperma ferox</i>	17	0.076	0.052	0.006	0.161	90	0.15
79	<i>Stenonema sp</i>	2	0.18	0.082	0.122	0.238	90	.
80	<i>Stictochironomus sp</i>	3	0.313	0.215	0.147	0.556	90	.
81	<i>Stylaria lacustris</i>	10	0.878	2.018	0.01	6.579	90	5.988
82	<i>Stylodrilus heringianus</i>	15	0.27	0.472	0.01	1.923	90	1.069
83	<i>Tanytarsus sp</i>	26	0.147	0.109	0.006	0.5	90	0.294
84	<i>Thienemannimyia sp</i>	6	0.251	0.145	0.072	0.5	90	.
85	<i>Tubifex sp</i>	36	1.941	6.328	0.111	38.462	90	2.944
86	<i>Turbellaria</i>	15	0.171	0.072	0.083	0.278	90	0.278
87	<i>Uncinaiis uncinata</i>	12	0.105	0.062	0.006	0.2	90	0.194
88	<i>Valvata sincera</i>	13	0.697	1.772	0.03	6.579	90	4.17
89	<i>Valvata tricarinata</i>	36	0.135	0.099	0.006	0.5	90	0.268
90	<i>Vejdoskyella intermedia</i>	0						
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	7	0.157	0.055	0.122	0.278	90	.
93	<i>Chironomus plumosus</i>	1	0.161		0.161	0.161	90	.
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera sp</i>	12	0.268	0.191	0.121	0.671	90	0.671
96	<i>Helobdella stagnalis</i>	2	1.253	1.486	0.202	2.304	90	.
97	<i>Hexagenia limbata</i>	0						
98	<i>Hexagenia sp</i>	0						
99	<i>Tanypus sp</i>	1	0.179		0.179	0.179	90	.
100	<i>Tubifex tubifex</i>	0						

Table 2: BENZENE HEXACHLORIDE (BHC) - Species Screening Level Concentrations (ug/g organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	30	0.933	2.442	0.03	12.083	90	3.209
2	Aelosoma sp	1	0.769		0.769	0.769	90	.
3	Amnicola limosa	40	0.914	2.127	0.006	12.083	90	2.082
4	Asellus sp	26	0.601	1.42	0.007	6.579	90	2.186
5	Aulodrilus limnobius	11	0.83	1.819	0.006	6	90	5.218
6	Aulodrilus pigueti	33	2.208	4.707	0.019	22.368	90	9.185
7	Aulodrilus pleuriseta	15	0.883	1.583	0.006	6	90	3.655
8	Bithynia tentaculata	15	0.18	0.164	0.006	0.556	90	0.501
9	Branchiura sowerbyi	3	0.195	0.032	0.169	0.23	90	.
10	Caenis sp	15	2.777	6.235	0.065	22.368	90	16.197
11	Ceraclea sp	20	0.993	2.711	0.022	12.083	90	3.092
12	Chaetogaster diaphanus	9	1.041	1.97	0.03	6	90	.
13	Cheumatopsyche sp	33	1.465	4.317	0.003	22.368	90	2.8
14	Chironomus sp	58	1.627	5.937	0.016	38.462	90	2.407
15	Cladopelma sp	14	3.304	4.065	0.016	12.083	90	11.597
16	Cladotanytarsus sp	20	2.673	5.445	0.017	22.368	90	11.475
17	Coelotanypus sp	7	1.22	2.237	0.023	6	90	.
18	Cricotopus sp	24	1.325	2.671	0.045	12.083	90	4.545
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	34	1.405	4.257	0.003	22.368	90	2.494
21	Dicrotendipes sp	22	2.24	3.527	0.003	12.083	90	9.667
22	Eukiefferiella sp	15	0.211	0.203	0.089	0.769	90	0.623
23	Gammarus fasciatus	99	1.565	5.093	0.003	38.462	90	2.778
24	Glossiphonia heteroclita	1	0.078		0.078	0.078	90	.
25	Glossosoma sp	12	0.224	0.23	0.089	0.769	90	0.696
26	Glyptotendipes sp	7	0.052	0.016	0.024	0.067	90	.
27	Gyraulus parvus	8	2.149	4.161	0.067	12.083	90	.
28	Helisoma anceps	7	1.776	2.018	0.267	6	90	.
29	Heterotrissocladius sp	0						
30	Hyalella azteca	13	1.782	2.256	0.064	6.579	90	5.766
31	Hydropsyche sp	11	0.452	0.537	0.089	1.655	90	1.559
32	Hydroptila sp	15	3.195	3.929	0.141	12.083	90	11.5
33	Ilyodrilus templetoni	9	6.383	7.549	0.022	22.368	90	.
34	Limnodrilus hoffmeisteri	75	1.051	3.271	0.003	22.368	90	2.036
35	Limnodrilus sp	47	1.426	5.592	0.04	38.462	90	2.399
36	Limnodrilus udekemianus	15	2.007	3.263	0.03	11.111	90	8.222
37	Lumbriculus variegatus	5	0.397	0.255	0.116	0.769	90	.
38	Manayunkia speciosa	27	0.925	3.814	0.056	20	90	0.474
39	Microtendipes sp	10	0.126	0.159	0.048	0.556	90	0.522
40	Mystacides sp	4	4.468	5.272	0.2	11.111	90	.
41	Nais behningi	1	0.769		0.769	0.769	90	.
42	Nais communis	10	1.811	3.738	0.116	12.083	90	11.208
43	Nais variabilis	39	1.31	2.82	0.022	12.083	90	6
44	Nanocladius sp	16	1.195	3.013	0.069	12.083	90	5.958
45	Neureclipsis sp	13	0.248	0.218	0.089	0.769	90	0.672
46	Oecetis sp	14	0.214	0.178	0.048	0.556	90	0.516
47	Parachironomus sp	12	3.636	6.787	0.024	22.368	90	19.283
48	Paralauterborniella sp	2	0.312	0.277	0.116	0.508	90	.
49	Paratendipes sp	13	0.074	0.083	0.006	0.263	90	0.222
50	Phaenopsectra sp	24	0.179	0.128	0.069	0.508	90	0.441
51	Phallodrilus sp	7	4.68	8.053	0.273	22.368	90	.
52	Physella gyrina	24	0.218	0.251	0.055	1.136	90	0.604

53	<i>Piguetiella michiganensi</i>	26	1.214	2.592	0.089	11.111	90	6.089
54	<i>Pisidium casertanum</i>	57	0.332	0.83	0.017	6	90	0.512
55	<i>Pisidium compressum</i>	8	0.155	0.156	0.006	0.465	90	.
56	<i>Pisidium conventus</i>	6	0.097	0.071	0.019	0.161	90	.
57	<i>Pisidium fallax</i>	12	3.094	4.354	0.116	12.083	90	11.792
58	<i>Pisidium henslowanum</i>	14	0.272	0.357	0.006	1.176	90	1.029
59	<i>Pisidium lilljeborgi</i>	13	0.56	1.809	0.006	6.579	90	4.012
60	<i>Pisidium nitidum</i>	8	0.179	0.165	0.019	0.465	90	.
61	<i>Pisidium variabile</i>	12	0.058	0.063	0.006	0.161	90	0.161
62	<i>Pleurocera acuta</i>	28	0.9	3.747	0.022	20	90	0.551
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	54	0.638	1.84	0.056	12.083	90	0.843
65	<i>Pontoporeia hoyi</i>	17	0.194	0.33	0.006	1.176	90	0.941
66	<i>Potamothrix moldaviensis</i>	11	0.389	0.527	0.017	1.655	90	1.559
67	<i>Potamothrix vej dovskyi</i>	24	0.148	0.126	0.019	0.508	90	0.349
68	<i>Pristina foreli</i>	8	1.543	1.976	0.116	6	90	.
69	<i>Pristina osborni</i>	7	0.745	0.694	0.116	2	90	.
70	<i>Procladius</i> sp	110	0.768	1.832	0.006	12.083	90	2.082
71	<i>Prostoma rubrum</i>	43	0.958	3.128	0.022	20	90	1.733
72	<i>Pseudocloeon</i> sp	0						
73	<i>Quistadrilus multisetosus</i>	7	0.132	0.137	0.017	0.385	90	.
74	<i>Slavina appendiculata</i>	34	2.139	4.653	0.019	22.368	90	8.704
75	<i>Specaria josinae</i>	39	1.47	4.064	0.006	22.368	90	6
76	<i>Sphaerium nitidum</i>	15	0.204	0.35	0.006	1.176	90	1
77	<i>Sphaerium striatinum</i>	17	0.139	0.129	0.003	0.526	90	0.287
78	<i>Spirosperma ferox</i>	45	0.366	0.931	0.006	6	90	0.658
79	<i>Stenonema</i> sp	19	0.198	0.196	0.069	0.769	90	0.526
80	<i>Stictochironomus</i> sp	8	0.45	0.394	0.078	1.176	90	.
81	<i>Stylaria lacustris</i>	32	1.943	4.505	0.069	22.368	90	6.405
82	<i>Stylodrilus heringianus</i>	29	0.278	0.353	0.089	1.923	90	0.526
83	<i>Tanytarsus</i> sp	48	1.163	3.687	0.003	22.368	90	2.215
84	<i>Thienemannimyia</i> sp	23	0.319	0.473	0.018	2	90	1.108
85	<i>Tubifex</i> sp	27	2.342	7.298	0.051	38.462	90	3.352
86	<i>Turbellaria</i>	23	3.215	5.37	0.022	22.368	90	11.694
87	<i>Uncinaiis uncinata</i>	0						
88	<i>Valvata sincera</i>	33	1.083	2.344	0.006	11.111	90	4.436
89	<i>Valvata tricarinata</i>	41	0.86	2.136	0.03	12.083	90	1.931
90	<i>Vejdovskyella intermedia</i>	14	0.105	0.141	0.006	0.508	90	0.386
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	21	0.146	0.304	0.003	1.176	90	0.765
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	12	0.127	0.112	0.038	0.336	90	0.336
97	<i>Hexagenia limbata</i>	6	0.43	0.921	0.003	2.304	90	.
98	<i>Hexagenia</i> sp	0						
99	<i>Tanytus</i> sp	0						
100	<i>Tubifex tubifex</i>	13	0.132	0.109	0.017	0.304	90	0.303

Table 2a: a-BHC - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum %	Conc.	
1	Ablabesmyia sp	10	0.663	1.123	0.03	3.333	90	3.209
2	Aelosoma sp	1	0.769		0.769	0.769	90	.
3	Amnicola limosa	16	0.608	0.906	0.013	3.333	90	2.464
4	Asellus sp	0						
5	Aulodrilus limnobius	5	0.556	0.872	0.013	2.091	90	.
6	Aulodrilus pigueti	15	1.419	2.834	0.039	11.111	90	6.444
7	Aulodrilus pleuriseta	7	0.66	0.772	0.013	2.091	90	.
8	Bithynia tentaculata	4	0.21	0.188	0.013	0.465	90	.
9	Branchiura sowerbyi	0						
10	Caenis sp	6	0.865	1.26	0.089	3.333	90	.
11	Ceraclea sp	10	0.587	0.994	0.022	3.333	90	3.077
12	Chaetogaster diaphanus	5	0.607	0.849	0.03	2.091	90	.
13	Cheumatopsyche sp	14	0.622	0.875	0.022	3.333	90	2.333
14	Chironomus sp	9	0.651	1.049	0.069	3.333	90	.
15	Cladopelma sp	6	3.067	4.112	0.022	11.111	90	.
16	Cladotanytarsus sp	9	1.022	1.086	0.141	3.333	90	.
17	Coelotanypus sp	1	2.091		2.091	2.091	90	.
18	Cricotopus sp	3	1.543	1.555	0.526	3.333	90	.
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	10	0.674	0.973	0.116	3.333	90	3.105
21	Dicrotendipes sp	4	4.467	4.505	1.333	11.111	90	.
22	Eukiefferiella sp	7	0.311	0.263	0.089	0.769	90	.
23	Gammarus fasciatus	30	1.534	4.048	0.013	20	90	3.209
24	Glossiphonia heteroclita	0						
25	Glossosoma sp	5	0.388	0.295	0.089	0.769	90	.
26	Glyptotendipes sp	0						
27	Gyraulus parvus	2	1.747	2.243	0.161	3.333	90	.
28	Helisoma anceps	3	1.296	0.814	0.465	2.091	90	.
29	Heterotrissocladius sp	0						
30	Hyalella azteca	0						
31	Hydropsyche sp	4	0.369	0.337	0.089	0.769	90	.
32	Hydroptila sp	7	2.708	3.872	0.141	11.111	90	.
33	Ilyodrilus templetoni	5	3.156	4.635	0.022	11.111	90	.
34	Limnodrilus hoffmeisteri	19	1.135	2.562	0.013	11.111	90	3.333
35	Limnodrilus sp	0						
36	Limnodrilus udekemianus	4	3.674	5.021	0.161	11.111	90	.
37	Lumbriculus variegatus	5	0.397	0.255	0.116	0.769	90	.
38	Manayunkia speciosa	14	1.656	5.281	0.069	20	90	10.254
39	Microtendipes sp	0						
40	Mystacides sp	3	3.858	6.281	0.2	11.111	90	.
41	Nais behningi	1	0.769		0.769	0.769	90	.
42	Nais communis	6	0.797	1.251	0.116	3.333	90	.
43	Nais variabilis	18	1.176	2.625	0.022	11.111	90	4.111
44	Nanocladius sp	8	0.669	1.103	0.069	3.333	90	.
45	Neureclipsis sp	7	0.344	0.26	0.089	0.769	90	.
46	Oecetis sp	3	0.282	0.175	0.116	0.465	90	.
47	Parachironomus sp	4	1.459	1.354	0.116	3.333	90	.
48	Paralauterborniella sp	2	0.312	0.277	0.116	0.508	90	.
49	Paratendipes sp	5	0.101	0.108	0.013	0.263	90	.
50	Phaenopsectra sp	10	0.233	0.158	0.069	0.508	90	0.504
51	Phallodrilus sp	4	1.029	0.757	0.465	2.091	90	.
52	Physella gyrina	9	0.262	0.222	0.069	0.682	90	.
53	Piguetiella michiganensi	10	1.549	3.411	0.089	11.111	90	10.209

54	<i>Pisidium casertanum</i>	22	0.346	0.466	0.022	2.091	90	0.981
55	<i>Pisidium compressum</i>	4	0.226	0.19	0.013	0.465	90	.
56	<i>Pisidium conventus</i>	2	0.1	0.087	0.039	0.161	90	.
57	<i>Pisidium fallax</i>	8	2.087	3.795	0.116	11.111	90	.
58	<i>Pisidium henslowanum</i>	6	0.372	0.435	0.013	1.176	90	.
59	<i>Pisidium lilljeborgi</i>	4	0.061	0.068	0.013	0.161	90	.
60	<i>Pisidium nitidum</i>	4	0.262	0.197	0.039	0.465	90	.
61	<i>Pisidium variabile</i>	4	0.061	0.068	0.013	0.161	90	.
62	<i>Pleurocera acuta</i>	14	1.661	5.283	0.022	20	90	10.385
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	19	0.538	0.815	0.069	3.333	90	2.091
65	<i>Pontoporeia hoyi</i>	5	0.284	0.503	0.013	1.176	90	.
66	<i>Potamothrix moldaviensis</i>	3	0.225	0.079	0.161	0.313	90	.
67	<i>Potamothrix vejdoskyi</i>	9	0.216	0.162	0.03	0.508	90	.
68	<i>Pristina foreli</i>	4	0.951	0.934	0.116	2.091	90	.
69	<i>Pristina osborni</i>	5	0.589	0.491	0.116	1.333	90	.
70	<i>Procladius</i> sp	21	1.039	2.452	0.013	11.111	90	3.085
71	<i>Prostoma rubrum</i>	22	1.318	4.2	0.022	20	90	1.864
72	<i>Pseudocloeon</i> sp	0						
73	<i>Quistadrilus multisetosus</i>	3	0.183	0.185	0.022	0.385	90	.
74	<i>Slavina appendiculata</i>	14	1.504	2.923	0.03	11.111	90	7.222
75	<i>Specaria josinae</i>	17	1.06	2.65	0.013	11.111	90	3.895
76	<i>Sphaerium nitidum</i>	5	0.284	0.503	0.013	1.176	90	.
77	<i>Sphaerium striatinum</i>	6	0.19	0.182	0.013	0.526	90	.
78	<i>Spirosperma ferox</i>	19	0.347	0.499	0.013	2.091	90	1.176
79	<i>Stenonema</i> sp	9	0.292	0.252	0.069	0.769	90	.
80	<i>Stictochironomus</i> sp	2	0.688	0.69	0.2	1.176	90	.
81	<i>Stylaria lacustris</i>	12	0.774	1.023	0.069	3.333	90	2.961
82	<i>Stylodrilus heringianus</i>	12	0.285	0.208	0.089	0.769	90	0.696
83	<i>Tanytarsus</i> sp	14	0.709	0.958	0.013	3.333	90	2.712
84	<i>Thienemannimyia</i> sp	7	0.481	0.448	0.089	1.333	90	.
85	<i>Tubifex</i> sp	0						
86	<i>Turbellaria</i>	14	1.615	2.873	0.022	11.111	90	7.222
87	<i>Uncinaiis uncinata</i>	0						
88	<i>Valvata sincera</i>	13	1.283	3.013	0.013	11.111	90	7.503
89	<i>Valvata tricarinata</i>	13	0.541	0.903	0.03	3.333	90	2.533
90	<i>Vejdoskyella intermedia</i>	6	0.169	0.192	0.013	0.508	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	1	1.176		1.176	1.176	90	.
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	0						
97	<i>Hexagenia limbata</i>	0						
98	<i>Hexagenia</i> sp	0						
99	<i>Tanypus</i> sp	0						
100	<i>Tubifex tubifex</i>	1	0.263		0.263	0.263	90	.

Table 2b: b-BHC - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	13	1.513	3.566	0.03	12.083	90	9.65
2	Aelosoma sp	0						
3	Amnicola limosa	10	2.137	3.954	0.013	12.083	90	11.475
4	Asellus sp	13	0.9	1.934	0.04	6.579	90	5.317
5	Aulodrilus limnobius	3	2.014	3.452	0.013	6	90	.
6	Aulodrilus pigueti	10	4.958	7.306	0.039	22.368	90	21.34
7	Aulodrilus pleuriseta	4	2.011	2.818	0.013	6	90	.
8	Bithynia tentaculata	9	0.188	0.171	0.013	0.556	90	.
9	Branchiura sowerbyi	3	0.195	0.032	0.169	0.23	90	.
10	Caenis sp	6	5.882	9.37	0.065	22.368	90	.
11	Ceraclea sp	5	2.516	5.349	0.089	12.083	90	.
12	Chaetogaster diaphanus	2	3.015	4.222	0.03	6	90	.
13	Cheumatopsyche sp	9	4.173	7.857	0.069	22.368	90	.
14	Chironomus sp	32	2.682	7.867	0.04	38.462	90	9.486
15	Cladopelma sp	4	6.595	4.15	2	12.083	90	.
16	Cladotanytarsus sp	5	8.523	8.989	0.161	22.368	90	.
17	Coelotanypus sp	3	2.044	3.426	0.065	6	90	.
18	Cricotopus sp	13	1.95	3.462	0.064	12.083	90	9.068
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	14	2.617	6.512	0.04	22.368	90	17.226
21	Dicrotendipes sp	9	2.973	4.274	0.051	12.083	90	.
22	Eukiefferiella sp	4	0.124	0.069	0.089	0.227	90	.
23	Gammarus fasciatus	39	2.596	7.199	0.013	38.462	90	6.296
24	Glossiphonia heteroclita	1	0.078		0.078	0.078	90	.
25	Glossosoma sp	5	0.114	0.032	0.089	0.165	90	.
26	Glyptotendipes sp	5	0.061	0.007	0.051	0.067	90	.
27	Gyraulus parvus	3	4.104	6.911	0.067	12.083	90	.
28	Helisoma anceps	2	4	2.828	2	6	90	.
29	Heterotrissocladius sp	0						
30	Hyaella azteca	13	1.782	2.256	0.064	6.579	90	5.766
31	Hydropsyche sp	2	0.089	0	0.089	0.089	90	.
32	Hydroptila sp	4	6.595	4.15	2	12.083	90	.
33	Ilyodrilus templetoni	3	13.583	8.14	6.296	22.368	90	.
34	Limnodrilus hoffmeisteri	12	4.143	6.877	0.013	22.368	90	19.283
35	Limnodrilus sp	47	1.426	5.592	0.04	38.462	90	2.399
36	Limnodrilus udekemianus	5	2.921	3.043	0.145	6.296	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	8	0.125	0.074	0.056	0.227	90	.
39	Microtendipes sp	10	0.126	0.159	0.048	0.556	90	0.522
40	Mystacides sp	1	6.296		6.296	6.296	90	.
41	Nais behningi	0						
42	Nais communis	2	6.122	8.43	0.161	12.083	90	.
43	Nais variabilis	11	2.505	3.961	0.069	12.083	90	10.926
44	Nanocladius sp	4	3.117	5.978	0.069	12.083	90	.
45	Neureclipsis sp	3	0.135	0.08	0.089	0.227	90	.
46	Oecetis sp	11	0.195	0.183	0.048	0.556	90	0.54
47	Parachironomus sp	3	12.151	10.184	2	22.368	90	.
48	Paralauterborniella sp	0						
49	Paratendipes sp	4	0.061	0.068	0.013	0.161	90	.
50	Phaenopsectra sp	9	0.152	0.106	0.069	0.417	90	.
51	Phallodrilus sp	2	14.184	11.574	6	22.368	90	.
52	Physella gyrina	5	0.113	0.065	0.069	0.227	90	.
53	Piguetiella michiganensi	8	1.7	2.748	0.089	6.296	90	.

54	<i>Pisidium casertanum</i>	13	0.654	1.622	0.03	6	90	3.953
55	<i>Pisidium compressum</i>	2	0.087	0.105	0.013	0.161	90	.
56	<i>Pisidium conventus</i>	2	0.1	0.087	0.039	0.161	90	.
57	<i>Pisidium fallax</i>	2	9.19	4.092	6.296	12.083	90	.
58	<i>Pisidium henslowanum</i>	4	0.271	0.413	0.013	0.882	90	.
59	<i>Pisidium lilljeborgi</i>	5	1.364	2.916	0.013	6.579	90	.
60	<i>Pisidium nitidum</i>	2	0.1	0.087	0.039	0.161	90	.
61	<i>Pisidium variabile</i>	4	0.061	0.068	0.013	0.161	90	.
62	<i>Pleurocera acuta</i>	7	0.139	0.07	0.069	0.227	90	.
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	25	0.875	2.611	0.056	12.083	90	2.65
65	<i>Pontoporeia hoyi</i>	5	0.225	0.372	0.013	0.882	90	.
66	<i>Potamothrix moldaviensis</i>	1	0.161		0.161	0.161	90	.
67	<i>Potamothrix vejdoskyi</i>	6	0.123	0.083	0.03	0.227	90	.
68	<i>Pristina foreli</i>	2	4	2.828	2	6	90	.
69	<i>Pristina osborni</i>	1	2		2	2	90	.
70	<i>Procladius</i> sp	54	1.032	2.06	0.013	12.083	90	3.056
71	<i>Prostoma rubrum</i>	10	0.939	1.871	0.069	6	90	5.6
72	<i>Pseudocloeon</i> sp	0						
73	<i>Quistadrilus multisetosus</i>	0						
74	<i>Slavina appendiculata</i>	11	4.511	7.088	0.03	22.368	90	20.311
75	<i>Specaria josinae</i>	12	3.154	6.473	0.013	22.368	90	17.547
76	<i>Sphaerium nitidum</i>	5	0.225	0.372	0.013	0.882	90	.
77	<i>Sphaerium striatinum</i>	5	0.122	0.087	0.013	0.227	90	.
78	<i>Spirosperma ferox</i>	12	0.684	1.692	0.013	6	90	4.465
79	<i>Stenonema</i> sp	5	0.113	0.065	0.069	0.227	90	.
80	<i>Stictochironomus</i> sp	3	0.505	0.404	0.078	0.882	90	.
81	<i>Stylaria lacustris</i>	12	4.225	6.849	0.069	22.368	90	19.283
82	<i>Stylodrilus heringianus</i>	9	0.378	0.588	0.089	1.923	90	.
83	<i>Tanytarsus</i> sp	13	3.298	6.721	0.013	22.368	90	18.254
84	<i>Thienemannimyia</i> sp	5	0.565	0.814	0.089	2	90	.
85	<i>Tubifex</i> sp	27	2.342	7.298	0.051	38.462	90	3.352
86	<i>Turbellaria</i>	5	9.75	7.917	2	22.368	90	.
87	<i>Uncinatis uncinata</i>	0						
88	<i>Valvata sincera</i>	9	1.665	2.62	0.013	6.296	90	.
89	<i>Valvata tricarinata</i>	17	1.362	3.187	0.03	12.083	90	7.68
90	<i>Vejdoskyella intermedia</i>	4	0.061	0.068	0.013	0.161	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	5	0.232	0.364	0.064	0.882	90	.
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	9	0.141	0.126	0.04	0.336	90	.
97	<i>Hexagenia limbata</i>	2	1.253	1.486	0.202	2.304	90	.
98	<i>Hexagenia</i> sp	0						
99	<i>Tanypus</i> sp	0						
100	<i>Tubifex tubifex</i>	0						

Table 2c: g-BHC - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	7	0.244	0.307	0.03	0.917	90	.
2	Aelosoma sp	0						
3	Amnicola limosa	10	0.249	0.254	0.006	0.917	90	0.856
4	Asellus sp	9	0.094	0.121	0.007	0.31	90	.
5	Aulodrilus limnobius	3	0.103	0.148	0.006	0.273	90	.
6	Aulodrilus pigueti	8	0.252	0.284	0.019	0.917	90	.
7	Aulodrilus pleuriseta	4	0.144	0.146	0.006	0.273	90	.
8	Bithynia tentaculata	2	0.084	0.11	0.006	0.161	90	.
9	Branchiura sowerbyi	0						
10	Caenis sp	3	0.391	0.457	0.089	0.917	90	.
11	Ceraclea sp	5	0.282	0.36	0.089	0.917	90	.
12	Chaetogaster diaphanus	2	0.151	0.172	0.03	0.273	90	.
13	Cheumatopsyche sp	10	0.206	0.266	0.003	0.917	90	0.852
14	Chironomus sp	15	0.167	0.223	0.016	0.917	90	0.547
15	Cladopelma sp	4	0.368	0.385	0.016	0.917	90	.
16	Cladotanytarsus sp	6	0.276	0.333	0.017	0.917	90	.
17	Coelotanypus sp	3	0.107	0.144	0.023	0.273	90	.
18	Cricotopus sp	7	0.239	0.31	0.045	0.917	90	.
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	7	0.209	0.331	0.003	0.917	90	.
21	Dicrotendipes sp	7	0.262	0.318	0.003	0.917	90	.
22	Eukiefferiella sp	4	0.124	0.069	0.089	0.227	90	.
23	Gammarus fasciatus	27	0.175	0.267	0.003	1.136	90	0.432
24	Glossiphonia heteroclita	0						
25	Glossosoma sp	2	0.089	0	0.089	0.089	90	.
26	Glyptotendipes sp	2	0.031	0.009	0.024	0.038	90	.
27	Gyraulus parvus	3	0.461	0.401	0.161	0.917	90	.
28	Helisoma anceps	2	0.27	0.004	0.267	0.273	90	.
29	Heterotrissocladius sp	0						
30	Hyaella azteca	0						
31	Hydropsyche sp	3	0.163	0.128	0.089	0.31	90	.
32	Hydroptila sp	4	0.648	0.446	0.267	1.136	90	.
33	Ilyodrilus templetoni	1	0.917		0.917	0.917	90	.
34	Limnodrilus hoffmeisteri	33	0.126	0.174	0.003	0.917	90	0.303
35	Limnodrilus sp	0						
36	Limnodrilus udekemianus	5	0.154	0.118	0.032	0.273	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	5	0.159	0.074	0.069	0.227	90	.
39	Microtendipes sp	0						
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	2	0.539	0.534	0.161	0.917	90	.
43	Nais variabilis	10	0.238	0.25	0.069	0.917	90	0.852
44	Nanocladius sp	4	0.326	0.4	0.069	0.917	90	.
45	Neureclipsis sp	3	0.135	0.08	0.089	0.227	90	.
46	Oecetis sp	0						
47	Parachironomus sp	4	0.308	0.421	0.024	0.917	90	.
48	Paralauterborniella sp	0						
49	Paratendipes sp	4	0.054	0.072	0.006	0.161	90	.
50	Phaenopsectra sp	5	0.121	0.054	0.069	0.192	90	.
51	Phallodrilus sp	1	0.273		0.273	0.273	90	.
52	Physella gyrina	8	0.264	0.362	0.069	1.136	90	.

53	<i>Piguetiella michiganensi</i>	8	0.308	0.339	0.089	1.136	90	.
54	<i>Pisidium casertanum</i>	21	0.126	0.1	0.017	0.3	90	0.29
55	<i>Pisidium compressum</i>	2	0.084	0.11	0.006	0.161	90	.
56	<i>Pisidium conventus</i>	2	0.09	0.1	0.019	0.161	90	.
57	<i>Pisidium fallax</i>	2	1.027	0.155	0.917	1.136	90	.
58	<i>Pisidium henslowanum</i>	4	0.123	0.133	0.006	0.294	90	.
59	<i>Pisidium lilljeborgi</i>	4	0.054	0.072	0.006	0.161	90	.
60	<i>Pisidium nitidum</i>	2	0.09	0.1	0.019	0.161	90	.
61	<i>Pisidium variabile</i>	4	0.054	0.072	0.006	0.161	90	.
62	<i>Pleurocera acuta</i>	7	0.139	0.07	0.069	0.227	90	.
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum sp</i>	10	0.233	0.25	0.069	0.917	90	0.852
65	<i>Pontoporeia hoyi</i>	7	0.109	0.12	0.006	0.294	90	.
66	<i>Potamothrix moldaviensis</i>	3	0.163	0.147	0.017	0.31	90	.
67	<i>Potamothrix vejdoskyi</i>	8	0.096	0.085	0.019	0.227	90	.
68	<i>Pristina foreli</i>	2	0.27	0.004	0.267	0.273	90	.
69	<i>Pristina osborni</i>	1	0.267		0.267	0.267	90	.
70	<i>Procladius sp</i>	29	0.13	0.181	0.006	0.917	90	0.294
71	<i>Prostoma rubrum</i>	11	0.256	0.301	0.069	1.136	90	0.964
72	<i>Pseudocloeon sp</i>	0						
73	<i>Quistadrilus multisetosus</i>	3	0.093	0.123	0.017	0.235	90	.
74	<i>Slavina appendiculata</i>	9	0.229	0.276	0.019	0.917	90	.
75	<i>Specaria josinae</i>	10	0.147	0.095	0.006	0.273	90	0.272
76	<i>Sphaerium nitidum</i>	5	0.102	0.124	0.006	0.294	90	.
77	<i>Sphaerium striatinum</i>	6	0.101	0.093	0.003	0.227	90	.
78	<i>Spirosperma ferox</i>	14	0.119	0.1	0.006	0.294	90	0.283
79	<i>Stenonema sp</i>	5	0.113	0.065	0.069	0.227	90	.
80	<i>Stictochironomus sp</i>	3	0.237	0.109	0.111	0.304	90	.
81	<i>Stylaria lacustris</i>	8	0.275	0.27	0.069	0.917	90	.
82	<i>Stylodrilus heringianus</i>	8	0.154	0.058	0.089	0.227	90	.
83	<i>Tanytarsus sp</i>	20	0.143	0.207	0.003	0.917	90	0.299
84	<i>Thienemannimyia sp</i>	7	0.126	0.097	0.018	0.267	90	.
85	<i>Tubifex sp</i>	0						
86	<i>Turbellaria</i>	4	0.648	0.446	0.267	1.136	90	.
87	<i>Uncinaxis uncinata</i>	0						
88	<i>Valvata sincera</i>	9	0.137	0.12	0.006	0.31	90	.
89	<i>Valvata tricarinata</i>	9	0.249	0.267	0.03	0.917	90	.
90	<i>Vejdoskyella intermedia</i>	4	0.054	0.072	0.006	0.161	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	13	0.045	0.076	0.003	0.294	90	0.203
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera sp</i>	0						
96	<i>Helobdella stagnalis</i>	2	0.074	0.052	0.038	0.111	90	.
97	<i>Hexagenia limbata</i>	3	0.016	0.012	0.003	0.026	90	.
98	<i>Hexagenia sp</i>	0						
99	<i>Tanytus sp</i>	0						
100	<i>Tubifex tubifex</i>	10	0.127	0.114	0.017	0.304	90	0.304

Table 3: CHLORDANE - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum %	Conc.	
1	Ablabesmyia sp	22	0.478	0.404	0.083	1.613	90	1.077
2	Aelosoma sp	2	1.175	0.515	0.811	1.538	90	.
3	Amnicola limosa	25	0.484	0.47	0.013	1.613	90	1.432
4	Asellus sp	21	0.648	1.539	0.019	6.579	90	2.861
5	Aulodrilus limnobius	5	0.303	0.496	0.013	1.182	90	.
6	Aulodrilus pigueti	20	0.416	0.378	0.039	1.333	90	1.147
7	Aulodrilus pleuriseta	7	0.483	0.558	0.013	1.333	90	.
8	Bithynia tentaculata	11	0.317	0.461	0.013	1.613	90	1.401
9	Branchiura sowerbyi	3	0.195	0.032	0.169	0.23	90	.
10	Caenis sp	10	0.296	0.264	0.065	0.833	90	0.817
11	Ceraclea sp	19	0.829	1.591	0.179	7.143	90	1.579
12	Chaetogaster diaphanus	4	0.764	0.73	0.118	1.579	90	.
13	Cheumatopsyche sp	27	0.718	1.352	0.083	7.143	90	1.547
14	Chironomus sp	53	1.19	5.336	0.022	38.462	90	1.649
15	Cladopelma sp	7	0.794	0.383	0.2	1.333	90	.
16	Cladotanytarsus sp	10	0.85	0.545	0.2	1.613	90	1.61
17	Coelotanypus sp	3	0.438	0.644	0.065	1.182	90	.
18	Cricotopus sp	22	1.173	1.867	0.022	7.143	90	4.545
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	20	0.431	0.456	0.04	1.613	90	1.504
21	Dicrotendipes sp	10	0.541	0.478	0.051	1.333	90	1.318
22	Eukiefferiella sp	16	0.878	1.734	0.179	7.143	90	3.248
23	Gammarus fasciatus	68	1.153	4.712	0.013	38.462	90	1.682
24	Glossiphonia heteroclita	1	0.078		0.078	0.078	90	.
25	Glossosoma sp	12	1.042	1.966	0.179	7.143	90	5.462
26	Glyptotendipes sp	5	0.061	0.007	0.051	0.067	90	.
27	Gyraulus parvus	6	0.598	0.585	0.067	1.613	90	.
28	Helisoma anceps	3	1.016	0.425	0.533	1.333	90	.
29	Heterotrissocladius sp	0						
30	Hyaella azteca	13	1.782	2.256	0.064	6.579	90	5.766
31	Hydropsyche sp	10	1.214	2.16	0.179	7.143	90	6.586
32	Hydroptila sp	8	1.76	2.203	0.533	7.143	90	.
33	Ilyodrilus templetoni	3	0.567	0.328	0.2	0.833	90	.
34	Limnodrilus hoffmeisteri	51	0.267	0.343	0.013	1.613	90	0.743
35	Limnodrilus sp	47	1.528	5.572	0.04	38.462	90	2.399
36	Limnodrilus udekemianus	11	0.666	0.531	0.019	1.613	90	1.557
37	Lumbriculus variegatus	2	4.341	3.963	1.538	7.143	90	.
38	Manayunkia speciosa	20	0.368	0.343	0.056	1.579	90	0.775
39	Microtendipes sp	11	0.258	0.463	0.048	1.579	90	1.374
40	Mystacides sp	0						
41	Nais behningi	3	1.309	0.432	0.811	1.579	90	.
42	Nais communis	6	0.971	0.518	0.323	1.613	90	.
43	Nais variabilis	30	0.671	1.295	0.083	7.143	90	1.518
44	Nanocladius sp	13	0.533	0.506	0.139	1.579	90	1.563
45	Neureclipsis sp	11	0.505	0.536	0.179	1.579	90	1.571
46	Oecetis sp	11	0.195	0.183	0.048	0.556	90	0.54
47	Parachironomus sp	4	0.842	0.35	0.533	1.333	90	.
48	Paralauterborniella sp	0						
49	Paratendipes sp	8	0.298	0.541	0.013	1.613	90	.
50	Phaenopsectra sp	20	0.367	0.349	0.083	1.579	90	0.721
51	Phallodrilus sp	2	0.996	0.262	0.811	1.182	90	.
52	Physella gyrina	20	0.65	1.568	0.022	7.143	90	1.502

53	<i>Piguetiella michiganensi</i>	19	0.507	0.449	0.083	1.613	90	1.579
54	<i>Pisidium casertanum</i>	50	0.359	0.469	0.039	2.647	90	0.775
55	<i>Pisidium compressum</i>	4	0.493	0.76	0.013	1.613	90	.
56	<i>Pisidium conventus</i>	4	0.513	0.744	0.039	1.613	90	.
57	<i>Pisidium fallax</i>	5	2.207	2.782	0.667	7.143	90	.
58	<i>Pisidium henslowanum</i>	9	0.754	0.95	0.013	2.647	90	.
59	<i>Pisidium lilljeborgi</i>	9	0.996	2.154	0.013	6.579	90	.
60	<i>Pisidium nitidum</i>	4	0.513	0.744	0.039	1.613	90	.
61	<i>Pisidium variabile</i>	8	0.298	0.541	0.013	1.613	90	.
62	<i>Pleurocera acuta</i>	25	0.652	1.403	0.139	7.143	90	1.555
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum sp</i>	46	0.563	1.053	0.056	7.143	90	0.938
65	<i>Pontoporeia hoyi</i>	16	0.428	0.701	0.013	2.647	90	1.923
66	<i>Potamothrix moldaviensis</i>	10	0.306	0.465	0.086	1.613	90	1.484
67	<i>Potamothrix vejdoskyi</i>	17	0.329	0.362	0.039	1.613	90	0.686
68	<i>Pristina foreli</i>	4	0.965	0.362	0.533	1.333	90	.
69	<i>Pristina osborni</i>	6	2.156	2.478	0.533	7.143	90	.
70	<i>Procladius sp</i>	83	0.581	0.765	0.013	3.425	90	1.712
71	<i>Prostoma rubrum</i>	32	0.648	1.254	0.083	7.143	90	1.477
72	<i>Pseudocloeon sp</i>	0						
73	<i>Quistadrilus multisetosus</i>	11	0.212	0.107	0.056	0.391	90	0.391
74	<i>Slavina appendiculata</i>	22	0.427	0.434	0.039	1.538	90	1.288
75	<i>Specaria josinae</i>	26	0.427	0.463	0.013	1.613	90	1.407
76	<i>Sphaerium nitidum</i>	10	0.533	0.883	0.013	2.647	90	2.544
77	<i>Sphaerium striatinum</i>	17	0.353	0.349	0.013	1.579	90	0.679
78	<i>Spirosperma ferox</i>	34	0.395	0.553	0.013	2.647	90	1.38
79	<i>Stenonema sp</i>	17	0.71	1.692	0.139	7.143	90	2.659
80	<i>Stictochironomus sp</i>	6	0.614	1.015	0.022	2.647	90	.
81	<i>Stylaria lacustris</i>	24	0.694	1.295	0.083	6.579	90	1.258
82	<i>Stylodrilus heringianus</i>	26	0.714	1.395	0.083	7.143	90	1.706
83	<i>Tanytarsus sp</i>	32	0.449	0.616	0.013	2.647	90	1.567
84	<i>Thienemannimyia sp</i>	16	0.5	0.511	0.083	1.579	90	1.551
85	<i>Tubifex sp</i>	27	2.462	7.264	0.051	38.462	90	3.352
86	<i>Turbellaria</i>	10	1.582	2.004	0.2	7.143	90	6.586
87	<i>Uncinatis uncinata</i>	0						
88	<i>Valvata sincera</i>	22	0.319	0.445	0.013	1.579	90	1.288
89	<i>Valvata tricarinata</i>	29	0.572	1.213	0.051	6.579	90	1.333
90	<i>Vejdoskyella intermedia</i>	8	0.298	0.541	0.013	1.613	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	19	0.306	0.583	0.022	2.647	90	0.4
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera sp</i>	0						
96	<i>Helobdella stagnalis</i>	10	0.129	0.125	0.022	0.336	90	0.336
97	<i>Hexagenia limbata</i>	2	1.253	1.486	0.202	2.304	90	.
98	<i>Hexagenia sp</i>	0						
99	<i>Tanypus sp</i>	0						
100	<i>Tubifex tubifex</i>	21	0.135	0.111	0.022	0.4	90	0.376

Table 4: Total DDT - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	56	0.67	0.612	0.042	2.475	90	1.701
2	Aelosoma sp	4	0.709	1.156	0.01	2.432	90	.
3	Amnicola limosa	68	0.536	0.541	0.01	2.881	90	1.17
4	Asellus sp	108	4.045	29.027	0.003	301.5	90	3.425
5	Aulodrilus limnobius	12	3.569	11.474	0.032	40	90	28.16
6	Aulodrilus pigueti	32	0.579	0.619	0.042	2.881	90	1.087
7	Aulodrilus pleuriseta	25	1.919	7.953	0.01	40	90	1.553
8	Bithynia tentaculata	44	0.467	0.428	0.032	2.273	90	0.985
9	Branchiura sowerbyi	24	0.598	1.77	0.121	8.897	90	0.436
10	Caenis sp	35	0.499	0.365	0.01	1.6	90	1.03
11	Ceraclea sp	29	0.602	0.583	0.015	2.432	90	1.163
12	Chaetogaster diaphanus	25	1.954	7.946	0.03	40	90	1.542
13	Cheumatopsyche sp	49	0.574	0.579	0.003	2.881	90	1.136
14	Chironomus sp	171	3.351	23.658	0.011	301.5	90	2.282
15	Cladopelma sp	19	0.671	0.764	0.016	2.881	90	2.432
16	Cladotanytarsus sp	26	0.43	0.568	0.006	2.881	90	0.815
17	Coelotanypus sp	27	0.381	0.305	0.006	1.335	90	0.745
18	Cricotopus sp	77	5.682	34.284	0.011	301.5	90	7.418
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	135	0.831	3.524	0.003	40	90	1.133
21	Dicrotendipes sp	49	0.494	0.441	0.003	1.82	90	1.214
22	Eukiefferiella sp	22	0.621	0.585	0.015	2.432	90	1.591
23	Gammarus fasciatus	240	1.507	5.575	0.003	40	90	1.77
24	Glossiphonia heteroclita	4	0.667	0.623	0.157	1.57	90	.
25	Glossosoma sp	25	0.778	0.709	0.015	2.475	90	2.065
26	Glyptotendipes sp	35	0.417	0.38	0.003	1.335	90	1.188
27	Gyraulius parvus	22	1.602	3.554	0.01	16.304	90	5.061
28	Helisoma anceps	10	0.42	0.321	0.072	1.163	90	1.113
29	Heterotrissocladius sp	12	3.521	11.489	0.01	40	90	28.18
30	Hyaella azteca	59	3.043	4.315	0.01	13.636	90	9.091
31	Hydropsyche sp	24	0.621	0.69	0.089	2.7	90	2.109
32	Hydroptila sp	14	0.56	0.577	0.015	2.432	90	1.633
33	Ilyodrilus templetoni	6	0.497	0.216	0.187	0.833	90	.
34	Limnodrilus hoffmeisteri	164	2.748	23.752	0.003	301.5	90	1.233
35	Limnodrilus sp	236	1.532	4.96	0.111	38.462	90	2.304
36	Limnodrilus udekemianus	26	1.163	2.927	0.048	15.283	90	1.772
37	Lumbriculus variegatus	2	0.164	0.21	0.015	0.313	90	.
38	Manayunkia speciosa	44	1.636	5.955	0.069	40	90	2.029
39	Microtendipes sp	41	0.511	0.374	0.157	1.57	90	1.264
40	Mystacides sp	0						
41	Nais behningi	6	0.889	0.979	0.091	2.432	90	.
42	Nais communis	19	2.546	9.086	0.072	40	90	2.432
43	Nais variabilis	58	1.19	5.242	0.011	40	90	1.136
44	Nanocladius sp	19	0.555	0.457	0.015	1.786	90	1.136
45	Neureclipsis sp	15	0.689	0.699	0.089	2.881	90	1.834
46	Oecetis sp	57	0.587	0.494	0.01	2.7	90	1.257
47	Parachironomus sp	20	0.229	0.231	0.006	0.833	90	0.653
48	Paralauterborniella sp	9	5.183	13.097	0.083	40	90	.
49	Paratendipes sp	24	0.532	1.036	0.032	5.238	90	0.806
50	Phaenopsectra sp	46	0.747	0.708	0.01	2.881	90	1.894
51	Phallodrilus sp	8	1.056	1.034	0.227	2.881	90	.
52	Physella gyrina	51	6.652	42.128	0.01	301.5	90	2.4

53	<i>Piguetiella michiganensi</i>	42	1.414	6.11	0.042	40	90	1.122
54	<i>Pisidium casertanum</i>	136	3.092	26.029	0.006	301.5	90	1.136
55	<i>Pisidium compressum</i>	13	0.364	0.395	0.01	1.163	90	1.02
56	<i>Pisidium conventus</i>	21	0.417	0.465	0.01	1.63	90	1.304
57	<i>Pisidium fallax</i>	23	2.302	8.246	0.015	40	90	2.369
58	<i>Pisidium henslowanum</i>	32	0.664	2.155	0.01	12.353	90	0.806
59	<i>Pisidium lilljeborgi</i>	38	1.524	3.62	0.01	13.158	90	7.237
60	<i>Pisidium nitidum</i>	24	2.04	8.091	0.053	40	90	0.985
61	<i>Pisidium variabile</i>	30	0.295	0.337	0.01	1.429	90	0.806
62	<i>Pleurocera acuta</i>	38	0.605	0.499	0.015	2.273	90	1.139
63	<i>Polypedium scalaenum</i>	13	0.585	1.403	0.083	5.238	90	3.343
64	<i>Polypedium sp</i>	136	0.637	0.559	0.015	2.881	90	1.529
65	<i>Pontoporeia hoyi</i>	50	0.561	1.73	0.03	12.353	90	0.806
66	<i>Potamothrix moldaviensis</i>	44	1.258	5.991	0.01	40	90	0.887
67	<i>Potamothrix vej dovskyi</i>	51	1.237	5.564	0.006	40	90	1.136
68	<i>Pristina foreli</i>	7	6.354	14.857	0.133	40	90	.
69	<i>Pristina osborni</i>	11	4.264	11.883	0.091	40	90	32.486
70	<i>Procladius sp</i>	329	0.746	1.074	0.003	12.353	90	1.923
71	<i>Prostoma rubrum</i>	63	1.181	5.003	0.01	40	90	1.152
72	<i>Pseudocloeon sp</i>	2	0.121	0.15	0.015	0.227	90	.
73	<i>Quistadrilus multisetosus</i>	43	0.401	0.553	0.01	2.7	90	1.278
74	<i>Slavina appendiculata</i>	37	0.424	0.293	0.042	1.136	90	0.894
75	<i>Specaria josinae</i>	40	0.52	0.498	0.032	2.881	90	1.074
76	<i>Sphaerium nitidum</i>	30	0.738	2.211	0.032	12.353	90	0.806
77	<i>Sphaerium striatinum</i>	35	0.447	0.478	0.003	2.273	90	1.136
78	<i>Spirosperma ferox</i>	83	1.081	4.549	0.01	40	90	1.136
79	<i>Stenonema sp</i>	27	0.726	1.091	0.015	5.238	90	2.005
80	<i>Stictochironomus sp</i>	18	2.678	4.521	0.157	16.304	90	12.748
81	<i>Stylaria lacustris</i>	52	1.454	3.135	0.01	13.158	90	4.396
82	<i>Stylodrilus heringianus</i>	54	0.588	0.537	0.01	1.923	90	1.296
83	<i>Tanytarsus sp</i>	112	3.764	28.699	0.003	301.5	90	0.988
84	<i>Thienemannimyia sp</i>	36	0.564	0.908	0.015	5.238	90	1.285
85	<i>Tubifex sp</i>	144	2.087	6.245	0.111	38.462	90	2.959
86	<i>Turbellaria</i>	24	0.735	0.793	0.015	2.881	90	2.353
87	<i>Uncinaiis uncinata</i>	19	2.637	9.124	0.083	40	90	5.238
88	<i>Valvata sincera</i>	63	0.365	0.449	0.006	2.881	90	0.797
89	<i>Valvata tricarinata</i>	83	0.962	2.495	0.01	13.158	90	1.152
90	<i>Vej dovskyella intermedia</i>	55	1.151	5.401	0.01	40	90	1.055
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	76	0.391	1.417	0.006	12.353	90	0.651
94	<i>Cricotopus bicinctus</i>	1	0.161		0.161	0.161	90	.
95	<i>Ephemera sp</i>	0						
96	<i>Helobdella stagnalis</i>	58	0.495	0.42	0.003	2.111	90	1.134
97	<i>Hexagenia limbata</i>	15	0.924	0.968	0.003	2.304	90	2.304
98	<i>Hexagenia sp</i>	0						
99	<i>Tanytus sp</i>	0						
100	<i>Tubifex tubifex</i>	52	6.895	41.741	0.011	301.5	90	5.315

Table 4a: o,p' + p,p'-DDT Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	25	1.054	0.718	0.148	2.475	90	2.154
2	Aelosoma sp	0						
3	Amnicola limosa	19	0.535	0.351	0.032	1.163	90	1.136
4	Asellus sp	36	10.649	50.019	0.056	301.5	90	13.158
5	Aulodrilus limnobius	5	0.163	0.173	0.032	0.455	90	.
6	Aulodrilus pigueti	14	0.485	0.317	0.097	1.087	90	1.087
7	Aulodrilus pleuriseta	6	0.191	0.17	0.032	0.455	90	.
8	Bithynia tentaculata	21	0.477	0.349	0.032	1.335	90	1.092
9	Branchiura sowerbyi	12	0.984	2.494	0.121	8.897	90	6.366
10	Caenis sp	12	0.574	0.288	0.208	1.302	90	1.161
11	Ceráclea sp	11	0.669	0.327	0.417	1.163	90	1.158
12	Chaetogaster diaphanus	3	0.25	0.177	0.148	0.455	90	.
13	Cheumatopsyche sp	15	0.62	0.336	0.208	1.136	90	1.136
14	Chironomus sp	79	5.694	34.246	0.057	301.5	90	2.674
15	Cladopelma sp	4	0.509	0.222	0.333	0.833	90	.
16	Cladotanytarsus sp	6	0.608	0.23	0.333	0.833	90	.
17	Coelotanypus sp	11	0.579	0.386	0.185	1.335	90	1.329
18	Cricotopus sp	35	11.101	50.662	0.056	301.5	90	10.909
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	37	0.851	1.402	0.157	8.897	90	1.197
21	Dicrotendipes sp	16	0.719	0.461	0.157	1.82	90	1.481
22	Eukiefferiella sp	8	0.619	0.319	0.446	1.136	90	.
23	Gammarus fasciatus	87	1.701	5.78	0.032	38.462	90	2.304
24	Glossiphonia heteroclita	2	0.353	0.278	0.157	0.549	90	.
25	Glossosoma sp	11	1.152	0.679	0.446	2.475	90	2.344
26	Glyptotendipes sp	12	0.799	0.406	0.359	1.335	90	1.335
27	Gyraulus parvus	8	3.436	5.581	0.417	16.304	90	.
28	Helisoma anceps	3	0.65	0.448	0.333	1.163	90	.
29	Heterotrissocladius sp	0						
30	Hyaella azteca	26	4.202	5.12	0.127	13.636	90	13.301
31	Hydropsyche sp	4	0.446	0	0.446	0.446	90	.
32	Hydroptila sp	4	0.509	0.222	0.333	0.833	90	.
33	Ilyodrilus templetoni	2	0.625	0.295	0.417	0.833	90	.
34	Limnodrilus hoffmeisteri	33	11.168	52.273	0.032	301.5	90	11.97
35	Limnodrilus sp	118	1.754	4.972	0.111	38.462	90	2.506
36	Limnodrilus udekemianus	9	2.502	4.834	0.079	15.283	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	17	0.772	0.384	0.157	1.335	90	1.197
39	Microtendipes sp	20	0.659	0.4	0.157	1.335	90	1.332
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	4	0.716	0.2	0.417	0.833	90	.
43	Nais variabilis	18	0.578	0.29	0.208	1.136	90	1.136
44	Nanocladius sp	8	0.639	0.344	0.347	1.136	90	.
45	Neureclipsis sp	6	0.676	0.356	0.446	1.136	90	.
46	Oecetis sp	23	0.69	0.374	0.157	1.429	90	1.266
47	Parachironomus sp	3	0.528	0.268	0.333	0.833	90	.
48	Paralauterborniella sp	0						
49	Paratendipes sp	8	0.271	0.334	0.032	0.806	90	.
50	Phaenopsectra sp	19	1.001	0.614	0.208	2.174	90	2.066
51	Phallodrilus sp	2	0.809	0.501	0.455	1.163	90	.
52	Physella gyrina	14	22.685	80.267	0.347	301.5	90	154.25

53	<i>Piguetiella michiganensi</i>	13	0.779	0.317	0.208	1.136	90	1.136
54	<i>Pisidium casertanum</i>	29	11.227	55.841	0.097	301.5	90	1.364
55	<i>Pisidium compressum</i>	5	0.568	0.511	0.032	1.163	90	.
56	<i>Pisidium conventus</i>	4	0.452	0.41	0.097	0.806	90	.
57	<i>Pisidium fallax</i>	3	0.804	0.374	0.417	1.163	90	.
58	<i>Pisidium henslowanum</i>	9	0.512	0.422	0.032	1.163	90	.
59	<i>Pisidium lilljeborgi</i>	10	2.848	5.442	0.032	13.158	90	13.158
60	<i>Pisidium nitidum</i>	7	0.551	0.405	0.097	1.163	90	.
61	<i>Pisidium variabile</i>	8	0.271	0.334	0.032	0.806	90	.
62	<i>Pleurocera acuta</i>	15	0.727	0.344	0.347	1.163	90	1.147
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum sp</i>	62	0.836	0.581	0.111	2.381	90	1.58
65	<i>Pontoporeia hoyi</i>	10	0.364	0.353	0.032	0.806	90	0.806
66	<i>Potamothrix moldaviensis</i>	2	0.806	0	0.806	0.806	90	.
67	<i>Potamothrix vej dovskyi</i>	12	0.599	0.414	0.097	1.136	90	1.136
68	<i>Pristina foreli</i>	2	0.394	0.086	0.333	0.455	90	.
69	<i>Pristina osborni</i>		0.333		0.333	0.333	90	.
70	<i>Procladius sp</i>	117	1.063	1.03	0.032	6.8	90	2.32
71	<i>Prostoma rubrum</i>	19	0.657	0.34	0.208	1.163	90	1.136
72	<i>Pseudocloeon sp</i>	0						
73	<i>Quistadrilus multisetosus</i>	0						
74	<i>Slavina appendiculata</i>	16	0.449	0.33	0.097	1.136	90	1.136
75	<i>Specaria josinae</i>	18	0.513	0.356	0.032	1.087	90	1.087
76	<i>Sphaerium nitidum</i>	10	0.364	0.353	0.032	0.806	90	0.806
77	<i>Sphaerium striatinum</i>	10	0.605	0.419	0.032	1.136	90	1.136
78	<i>Spirosperma ferox</i>	24	0.53	0.368	0.032	1.163	90	1.136
79	<i>Stenonema sp</i>	10	0.565	0.304	0.347	1.136	90	1.136
80	<i>Stictochironomus sp</i>	10	2.956	5.047	0.157	16.304	90	15.326
81	<i>Stylaria lacustris</i>	20	1.914	3.856	0.208	13.158	90	11.956
82	<i>Stylodrilus heringianus</i>	19	0.866	0.481	0.208	1.923	90	1.923
83	<i>Tanytarsus sp</i>	30	11.511	54.857	0.032	301.5	90	6.98
84	<i>Thienemannimyia sp</i>	9	0.576	0.333	0.208	1.136	90	.
85	<i>Tubifex sp</i>	72	2.301	6.231	0.111	38.462	90	3.275
86	<i>Turbellaria</i>	5	0.64	0.35	0.333	1.163	90	.
87	<i>Uncinaiis uncinata</i>	0						
88	<i>Valvata sincera</i>	14	0.381	0.323	0.032	1.335	90	0.959
89	<i>Valvata tricarinata</i>	34	1.28	3.034	0.148	13.158	90	1.249
90	<i>Vejdovskyella intermedia</i>	8	0.271	0.334	0.032	0.806	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	11	0.264	0.238	0.056	0.735	90	0.735
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera sp</i>	0						
96	<i>Helobdella stagnalis</i>	26	0.66	0.488	0.157	2.111	90	1.335
97	<i>Hexagenia limbata</i>	4	1.557	0.924	0.405	2.304	90	.
98	<i>Hexagenia sp</i>	0						
99	<i>Tanytus sp</i>	0						
100	<i>Tubifex tubifex</i>	11	31.125	89.809	0.056	301.5	90	244.461

Table 5: p,p'-DDD - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum %	Conc.	
1	Ablabesmyia sp	13	0.359	.164	0.148	0.806	90	0.666
2	Aelosoma sp	0						
3	Amnicola limosa	16	0.689	.420	0.203	1.63	90	1.402
4	Asellus sp	20	0.967	1.545	0.083	6.579	90	3.245
5	Aulodrilus limnobius	3	0.269	.163	0.148	0.455	90	.
6	Aulodrilus pigueti	8	0.557	.240	0.347	1.087	90	.
7	Aulodrilus pleuriseta	4	0.368	.240	0.148	0.667	90	.
8	Bithynia tentaculata	10	0.475	.429	0.202	1.57	90	1.494
9	Branchiura sowerbyi	6	0.211	.080	0.121	0.356	90	.
10	Caenis sp	8	0.58	.289	0.326	1.075	90	.
11	Ceraclea sp	5	0.578	.312	0.417	1.136	90	.
12	Chaetogaster diaphanus	2	0.301	.217	0.148	0.455	90	.
13	Cheumatopsyche sp	11	0.599	.328	0.167	1.136	90	1.126
14	Chironomus sp	40	1.475	6.037	0.083	38.462	90	2.107
15	Cladopelma sp	5	0.495	.148	0.313	0.667	90	.
16	Cladotanytarsus sp	5	0.486	.275	0.083	0.806	90	.
17	Coelotanypus sp	6	0.316	.086	0.185	0.455	90	.
18	Cricotopus sp	13	1.092	1.636	0.064	4.545	90	4.545
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	23	0.601	.458	0.161	1.63	90	1.464
21	Dicrotendipes sp	11	0.537	.408	0.243	1.57	90	1.456
22	Eukiefferiella sp	4	0.619	.345	0.446	1.136	90	.
23	Gammarus fasciatus	50	1.684	5.600	0.111	38.462	90	2.237
24	Glossiphonia heteroclita	1	1.57		1.57	1.57	90	.
25	Glossosoma sp	5	0.334	.112	0.205	0.446	90	.
26	Glyptotendipes sp	6	0.329	.066	0.257	0.446	90	.
27	Gyraulus parvus	4	0.797	.593	0.334	1.63	90	.
28	Helisoma anceps	2	0.561	.150	0.455	0.667	90	.
29	Heterotrissocladius sp	0						
30	Hyalella azteca	14	1.669	2.209	0.064	6.579	90	5.562
31	Hydropsyche sp	5	0.46	.091	0.345	0.6	90	.
32	Hydroptila sp	3	0.513	.135	0.417	0.667	90	.
33	Ilyodrilus templetoni	1	0.417		0.417	0.417	90	.
34	Limnodrilus hoffmeisteri	29	0.37	.274	0.071	1.075	90	0.806
35	Limnodrilus sp	59	1.292	4.985	0.111	38.462	90	2.193
36	Limnodrilus udekemianus	5	0.491	.243	0.238	0.806	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	8	0.77	.482	0.278	1.57	90	.
39	Microtendipes sp	10	0.437	.409	0.219	1.57	90	1.468
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	2	0.612	.276	0.417	0.806	90	.
43	Nais variabilis	10	0.574	.266	0.347	1.136	90	1.119
44	Nanocladius sp	4	0.587	.369	0.347	1.136	90	.
45	Neureclipsis sp	3	0.676	.398	0.446	1.136	90	.
46	Oecetis sp	12	0.595	.447	0.219	1.57	90	1.47
47	Parachironomus sp	2	0.542	.177	0.417	0.667	90	.
48	Paralauterborniella sp	0						
49	Paratendipes sp	4	0.444	.320	0.148	0.806	90	.
50	Phaenopsectra sp	10	0.526	.443	0.205	1.63	90	1.564
51	Phallodrilus sp	1	0.455		0.455	0.455	90	.
52	Physella gyrina	8	0.74	.464	0.347	1.63	90	.

53	<i>Piguetiella michiganensi</i>	7	0.758	.316	0.417	1.136	90	.
54	<i>Pisidium casertanum</i>	22	1.135	2.534	0.083	12.353	90	1.482
55	<i>Pisidium compressum</i>	2	0.505	.426	0.203	0.806	90	.
56	<i>Pisidium conventus</i>	3	1.019	.538	0.62	1.63	90	.
57	<i>Pisidium fallax</i>	2	0.292	.177	0.167	0.417	90	.
58	<i>Pisidium henslowanum</i>	4	3.378	5.991	0.148	12.353	90	.
59	<i>Pisidium lilljeborgi</i>	6	1.665	2.466	0.148	6.579	90	.
60	<i>Pisidium nitidum</i>	3	0.574	.258	0.296	0.806	90	.
61	<i>Pisidium variabile</i>	4	0.444	.320	0.148	0.806	90	.
62	<i>Pleurocera acuta</i>	7	0.696	.348	0.347	1.136	90	.
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	31	0.459	.338	0.074	1.563	90	1.062
65	<i>Pontoporeia hoyi</i>	8	1.898	4.233	0.083	12.353	90	.
66	<i>Potamothrix moldaviensis</i>	6	0.501	.405	0.071	1.075	90	.
67	<i>Potamothrix vejdoskyi</i>	6	0.686	.359	0.148	1.136	90	.
68	<i>Pristina foreli</i>	2	0.561	.150	0.455	0.667	90	.
69	<i>Pristina osborni</i>	1	0.667		0.667	0.667	90	.
70	<i>Procladius</i> sp	73	0.795	1.552	0.071	12.353	90	1.806
71	<i>Prostoma rubrum</i>	10	0.641	.304	0.347	1.136	90	1.131
72	<i>Pseudocloeon</i> sp	0						
73	<i>Quistadrilus multisetosus</i>	8	0.591	.575	0.074	1.63	90	.
74	<i>Slavina appendiculata</i>	9	0.517	.276	0.148	1.136	90	.
75	<i>Specaria josinae</i>	10	0.554	.316	0.148	1.087	90	1.074
76	<i>Sphaerium nitidum</i>	5	2.826	5.333	0.148	12.353	90	.
77	<i>Sphaerium striatinum</i>	5	0.639	.392	0.203	1.136	90	.
78	<i>Spirosperma ferox</i>	15	1.288	3.075	0.083	12.353	90	5.623
79	<i>Stenonema</i> sp	5	0.565	.323	0.347	1.136	90	.
80	<i>Stictochironomus</i> sp	3	4.826	6.538	0.556	12.353	90	.
81	<i>Stylaria lacustris</i>	11	1.1	1.837	0.336	6.579	90	5.49
82	<i>Stylodrilus heringianus</i>	9	0.852	.498	0.417	1.923	90	.
83	<i>Tanytarsus</i> sp	16	1.185	2.988	0.071	12.353	90	4.379
84	<i>Thienemannimyia</i> sp	7	0.701	.508	0.167	1.63	90	.
85	<i>Tubifex</i> sp	36	1.839	6.347	0.111	38.462	90	2.944
86	<i>Turbellaria</i>	3	0.513	.135	0.417	0.667	90	.
87	<i>Uncinatis uncinata</i>	0						
88	<i>Valvata sincera</i>	11	0.451	.237	0.148	1	90	0.933
89	<i>Valvata tricarinata</i>	20	0.841	1.418	0.148	6.579	90	1.624
90	<i>Vejdoskyella intermedia</i>	4	0.444	.320	0.148	0.806	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	15	1.101	3.138	0.064	12.353	90	5.724
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	14	0.366	.366	0.096	1.57	90	1.085
97	<i>Hexagenia limbata</i>	2	1.253	1.486	0.202	2.304	90	.
98	<i>Hexagenia</i> sp	0						
99	<i>Tanypus</i> sp	0						
100	<i>Tubifex tubifex</i>	8	0.203	.194	0.071	0.625	90	.

Table 6: p,p'-DDE - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	18	0.361	0.271	0.042	0.825	90	0.768
2	Aelosoma sp	4	0.709	1.156	0.01	2.432	90	.
3	Amnicola limosa	33	0.462	0.666	0.01	2.881	90	1.456
4	Asellus sp	52	0.657	1.895	0.003	13.158	90	1.227
5	Aulodrilus limnobius	4	10.302	19.799	0.244	40	90	.
6	Aulodrilus pigueti	10	0.728	1.044	0.042	2.881	90	2.836
7	Aulodrilus pleuriseta	15	3.024	10.254	0.01	40	90	17.729
8	Bithynia tentaculata	13	0.446	0.561	0.145	2.273	90	1.586
9	Branchiura sowerbyi	6	0.211	0.08	0.121	0.356	90	.
10	Caenis sp	15	0.396	0.444	0.01	1.6	90	1.221
11	Ceraclea sp	13	0.553	0.816	0.015	2.432	90	2.369
12	Chaetogaster diaphanus	20	2.374	8.878	0.03	40	90	2.658
13	Cheumatopsyche sp	23	0.533	0.779	0.003	2.881	90	2.174
14	Chironomus sp	52	1.236	5.308	0.011	38.462	90	1.939
15	Cladopelma sp	10	0.823	1.042	0.016	2.881	90	2.836
16	Cladotanytarsus sp	15	0.339	0.715	0.006	2.881	90	1.468
17	Coelotanytus sp	10	0.203	0.11	0.006	0.334	90	0.333
18	Cricotopus sp	29	1.199	2.297	0.011	9.091	90	2.5
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	75	0.892	4.631	0.003	40	90	0.917
21	Dicrotendipes sp	22	0.308	0.369	0.003	1.6	90	0.798
22	Eukiefferiella sp	10	0.625	0.824	0.015	2.432	90	2.368
23	Gammarus fasciatus	103	1.256	5.431	0.003	40	90	1.711
24	Glossiphonia heteroclita	1	0.392		0.392	0.392	90	.
25	Glossosoma sp	9	0.568	0.749	0.015	2.432	90	.
26	Glyptotendipes sp	17	0.178	0.136	0.003	0.446	90	0.356
27	Gyraulus parvus	10	0.457	0.622	0.01	1.652	90	1.647
28	Helisoma anceps	5	0.226	0.171	0.072	0.5	90	.
29	Heterotrissocladius sp	12	3.521	11.489	0.01	40	90	28.18
30	Hyalella azteca	19	2.469	4.04	0.01	13.158	90	9.091
31	Hydropsyche sp	15	0.722	0.867	0.089	2.7	90	2.539
32	Hydroptila sp	7	0.609	0.827	0.015	2.432	90	.
33	Ilyodrilus templetoni	3	0.438	0.22	0.187	0.6	90	.
34	Limnodrilus hoffmeisteri	102	0.7	3.959	0.003	40	90	0.798
35	Limnodrilus sp	59	1.328	4.977	0.111	38.462	90	2.193
36	Limnodrilus udekemianus	12	0.439	0.455	0.048	1.6	90	1.36
37	Lumbriculus variegatus	2	0.164	0.21	0.015	0.313	90	.
38	Manayunkia speciosa	19	2.774	9.06	0.069	40	90	2.881
39	Microtendipes sp	11	0.309	0.099	0.208	0.556	90	0.523
40	Mystacides sp	0						
41	Nais behningi	6	0.889	0.979	0.091	2.432	90	.
42	Nais communis	13	3.407	11.013	0.072	40	90	24.973
43	Nais variabilis	30	1.763	7.296	0.011	40	90	2.649
44	Nanocladius sp	7	0.44	0.63	0.015	1.786	90	.
45	Neureclipsis sp	6	0.708	1.084	0.089	2.881	90	.
46	Oecetis sp	22	0.475	0.612	0.01	2.7	90	1.406
47	Parachironomus sp	15	0.128	0.127	0.006	0.526	90	0.336
48	Paralauterborniella sp	9	5.183	13.097	0.083	40	90	.
49	Paratendipes sp	12	0.736	1.43	0.096	5.238	90	3.876
50	Phaenopsectra sp	17	0.593	0.862	0.01	2.881	90	2.736
51	Phallodrilus sp	5	1.276	1.275	0.227	2.881	90	.
52	Physella gyrina	29	0.543	0.823	0.01	2.7	90	2.432

53	Piguetiella michiganensi	22	1.998	8.489	0.042	40	90	0.504
54	Pisidium casertanum	85	0.823	4.335	0.006	40	90	0.791
55	Pisidium compressum	6	0.147	0.155	0.01	0.432	90	.
56	Pisidium conventus	14	0.279	0.381	0.01	1.429	90	1.063
57	Pisidium fallax	18	2.775	9.321	0.015	40	90	6.189
58	Pisidium henslowanum	19	0.165	0.168	0.01	0.588	90	0.533
59	Pisidium lilljeborgi	22	0.884	2.77	0.01	13.158	90	1.48
60	Pisidium nitidum	14	3.098	10.623	0.053	40	90	20.349
61	Pisidium variabile	18	0.272	0.351	0.01	1.429	90	0.771
62	Pleurocera acuta	16	0.451	0.642	0.015	2.273	90	1.932
63	Polypedilum scalaenum	13	0.585	1.403	0.083	5.238	90	3.343
64	Polypedilum sp	43	0.479	0.57	0.015	2.881	90	0.853
65	Pontoporeia hoyi	32	0.288	0.311	0.03	1.429	90	0.759
66	Potamotheix moldaviensis	36	1.409	6.629	0.01	40	90	0.85
67	Potamotheix vejdoskyi	33	1.569	6.926	0.006	40	90	1.684
68	Pristina foreli	3	14.189	22.383	0.133	40	90	.
69	Pristina osborni	9	5.1	13.121	0.091	40	90	.
70	Procladius sp	139	0.454	0.65	0.003	3.425	90	1.2
71	Prostoma rubrum	34	1.632	6.818	0.01	40	90	2.353
72	Pseudocloeon sp	2	0.121	0.15	0.015	0.227	90	.
73	Quistadrilus multisetosus	35	0.358	0.547	0.01	2.7	90	1.216
74	Slavina appendiculata	12	0.32	0.238	0.042	0.698	90	0.655
75	Specaria josinae	12	0.502	0.774	0.042	2.881	90	2.184
76	Sphaerium nitidum	15	0.291	0.224	0.053	0.698	90	0.639
77	Sphaerium striatinum	20	0.32	0.504	0.003	2.273	90	0.776
78	Spirosperma ferox	44	1.311	6.005	0.01	40	90	1.936
79	Stenonema sp	12	0.929	1.619	0.015	5.238	90	4.531
80	Stictochironomus sp	5	0.833	0.506	0.392	1.652	90	.
81	Stylaria lacustris	21	1.201	2.984	0.01	13.158	90	4.677
82	Stylodrilus heringianus	26	0.294	0.438	0.01	1.923	90	0.849
83	Tanytarsus sp	66	0.869	4.905	0.003	40	90	0.62
84	Thienemannimyia sp	20	0.51	1.175	0.015	5.238	90	1.657
85	Tubifex sp	36	1.906	6.332	0.111	38.462	90	2.944
86	Turbellaria	16	0.806	0.955	0.015	2.881	90	2.567
87	Uncinatis uncinata	19	2.637	9.124	0.083	40	90	5.238
88	Valvata sincera	38	0.334	0.532	0.006	2.881	90	0.8
89	Valvata tricarinata	29	0.671	2.408	0.01	13.158	90	0.556
90	Vejdoskyella intermedia	43	1.381	6.101	0.01	40	90	1.935
91	Elliptio complanata	0						
92	Sphaerium simile	0						
93	Chironomus plumosus	50	0.207	0.235	0.006	1.239	90	0.574
94	Cricotopus bicinctus	1	0.161		0.161	0.161	90	.
95	Ephemera sp	0						
96	Helobdella stagnalis	18	0.357	0.25	0.003	0.978	90	0.702
97	Hexagenia limbata	9	0.569	0.821	0.003	2.304	90	.
98	Hexagenia sp	0						
99	Tanypus sp	0						
100	Tubifex tubifex	33	0.44	0.525	0.011	2.5	90	1.199

Table 7: DIELDRIN - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	28	2.219	3.83	0.059	19.107	90	4.917
2	Aelosoma sp	8	4.013	4.579	0.089	13.077	90	.
3	Amnicola limosa	60	2.436	5.252	0.007	34.091	90	6.176
4	Asellus sp	46	0.257	0.969	0.001	6.579	90	0.36
5	Aulodrilus limnobius	19	9.284	27.17	0.038	120	90	19.107
6	Aulodrilus pigueti	26	2.365	3.688	0.116	19.107	90	4.638
7	Aulodrilus pleuriseta	16	10.048	29.672	0.038	120	90	49.375
8	Bithynia tentaculata	19	2.871	7.737	0.038	34.091	90	6.25
9	Branchiura sowerbyi	8	0.551	0.969	0.121	2.941	90	.
10	Caenis sp	29	6.606	25.906	0.009	140	90	4.444
11	Ceraclea sp	45	8.412	25.318	0.089	140	90	13.179
12	Chaetogaster diaphanus	16	9.376	29.527	0.059	120	90	38.763
13	Cheumatopsyche sp	63	3.984	12.794	0.001	100	90	8.107
14	Chironomus sp	74	1.319	2.722	0.002	19.107	90	3.897
15	Cladopelma sp	17	2.476	4.834	0.003	19.107	90	11.155
16	Cladotanytarsus sp	35	1.981	3.81	0.001	19.107	90	4.146
17	Coelotanypus sp	13	0.283	0.412	0.001	1.46	90	1.135
18	Cricotopus sp	39	17.864	59.549	0.002	340.176	90	34.091
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	77	2.63	13.651	0.001	120	90	3.546
21	Dicrotendipes sp	30	0.753	1.171	0.001	4.444	90	3.076
22	Eukiefferiella sp	36	5.057	16.546	0.089	100	90	7.003
23	Gammarus fasciatus	149	4.334	17.244	0.001	140	90	4.444
24	Glossiphonia heteroclita	1	0.078		0.078	0.078	90	.
25	Glossosoma sp	28	2.498	3.46	0.134	13.333	90	7.736
26	Glyptotendipes sp	17	0.063	0.11	0.001	0.446	90	0.246
27	Gyraulus parvus	16	0.944	1.149	0.004	3.529	90	3.45
28	Helisoma anceps	5	1.999	2.394	0.545	6.25	90	.
29	Heterotrissocladius sp	10	14.78	37.025	0.111	120	90	108.714
30	Hyaella azteca	19	2.061	3.35	0.011	13.333	90	6.579
31	Hydropsyche sp	30	5.4	18.207	0.01	100	90	12.644
32	Hydroptila sp	30	6.963	25.21	0.134	140	90	6.074
33	Ilyodrilus templetoni	14	2.072	1.892	0.111	6.25	90	5.347
34	Limnodrilus hoffmeisteri	109	1.908	11.639	0.001	120	90	3.171
35	Limnodrilus sp	59	6.127	44.243	0.04	340.176	90	0.556
36	Limnodrilus udekemianus	21	0.627	0.998	0.002	3.611	90	2.686
37	Lumbriculus variegatus	28	11.87	31.345	0.111	140	90	27.196
38	Manayunkia speciosa	53	8.403	25.009	0.056	140	90	12.111
39	Microtendipes sp	13	0.41	0.773	0.006	2.632	90	2.15
40	Mystacides sp	12	1.607	1.585	0.111	4.444	90	4.311
41	Nais behningi	21	8.042	21.439	0.089	100	90	13.282
42	Nais communis	27	12.557	34.168	0.323	140	90	39.286
43	Nais variabilis	44	7.92	27.116	0.156	140	90	4.469
44	Nanocladius sp	27	7.964	26.589	0.111	140	90	10.838
45	Neureclipsis sp	25	3.052	3.016	0.375	13.077	90	7.952
46	Oecetis sp	31	2.118	4.125	0.01	19.107	90	4.436
47	Parachironomus sp	8	1.006	1.214	0.001	3.417	90	.
48	Paralauterborniella sp	13	13.923	33.074	0.575	120	90	85.636
49	Paratendipes sp	20	1.36	1.467	0.038	4.494	90	3.914
50	Phaenopsectra sp	33	2.216	3.602	0.006	19.107	90	4.359
51	Phallodrilus sp	14	1.82	2.582	0.111	10.278	90	6.539
52	Physella gyrina	55	2.383	5.235	0.002	34.091	90	4.364

53	<i>Piguetiella michiganensi</i>	27	11.555	34.349	0.25	140	90	34.667
54	<i>Pisidium casertanum</i>	108	4.108	17.816	0.001	140	90	4.242
55	<i>Pisidium compressum</i>	9	2.137	1.772	0.038	4.494	90	.
56	<i>Pisidium conventus</i>	3	0.161	0.145	0.043	0.323	90	.
57	<i>Pisidium fallax</i>	64	7.097	22.898	0.001	140	90	9.722
58	<i>Pisidium henslowanum</i>	13	2.037	2.329	0.038	8.75	90	6.583
59	<i>Pisidium lilljeborgi</i>	8	0.95	2.279	0.038	6.579	90	.
60	<i>Pisidium nitidum</i>	14	9.749	31.754	0.005	120	90	61.806
61	<i>Pisidium variabile</i>	7	3.293	7.031	0.038	19.107	90	.
62	<i>Pleurocera acuta</i>	53	5.962	19.502	0.089	140	90	9.833
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	93	4.442	17.721	0.005	140	90	4.296
65	<i>Pontoporeia hoyi</i>	16	0.139	0.363	0.006	1.471	90	0.667
66	<i>Potamothrix moldaviensis</i>	29	10.256	28.451	0.002	120	90	34.091
67	<i>Potamothrix vejdoskyi</i>	37	5.92	20.108	0.001	120	90	7.77
68	<i>Pristina foreli</i>	10	13.495	37.45	0.476	120	90	108.449
69	<i>Pristina osborni</i>	36	10.093	25.438	0.089	120	90	19.561
70	<i>Procladius</i> sp	148	2.958	27.944	0.001	340.176	90	2.313
71	<i>Prostoma rubrum</i>	80	7.517	23.093	0.089	140	90	12.797
72	<i>Pseudocloeon</i> sp	13	2.381	2.651	0.111	9.167	90	7.704
73	<i>Quistadrilus multisetosus</i>	37	0.739	1.719	0.001	9.167	90	2.55
74	<i>Slavina appendiculata</i>	27	7.774	26.774	0.059	140	90	14.283
75	<i>Specaria josinae</i>	26	1.667	1.543	0.038	6.25	90	4.032
76	<i>Sphaerium nitidum</i>	9	1.036	1.086	0.038	3	90	.
77	<i>Sphaerium striatinum</i>	41	2.839	5.661	0.001	34.091	90	6.613
78	<i>Spirosperma ferox</i>	67	6.217	22.477	0.001	140	90	6.75
79	<i>Stenonema</i> sp	38	6.353	22.646	0.089	140	90	13.103
80	<i>Stictochironomus</i> sp	10	0.689	1.243	0.002	4	90	3.747
81	<i>Stylaria lacustris</i>	34	2.471	3.522	0.111	19.107	90	5.512
82	<i>Stylodrilus heringianus</i>	51	5.44	19.476	0.134	140	90	9.083
83	<i>Tanytarsus</i> sp	64	3.631	15.196	0.001	120	90	5.819
84	<i>Thienemannimyia</i> sp	37	5.538	22.92	0.001	140	90	6.135
85	<i>Tubifex</i> sp	36	9.872	56.628	0.051	340.176	90	1.316
86	<i>Turbellaria</i>	72	6.379	20.251	0.089	140	90	9.944
87	<i>Uncinaiis uncinata</i>	6	23.394	47.387	2.43	120	90	.
88	<i>Valvata sincera</i>	41	1.083	1.318	0.001	6.25	90	2.926
89	<i>Valvata tricarinata</i>	46	1.849	3.297	0.007	19.107	90	4.986
90	<i>Vejdoskyella intermedia</i>	21	9.155	26.41	0.038	120	90	28.701
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	41	0.073	0.253	0.001	1.471	90	0.076
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	1	1.429		1.429	1.429	90	.
96	<i>Helobdella stagnalis</i>	18	0.108	0.11	0.001	0.336	90	0.336
97	<i>Hexagenia limbata</i>	11	0.243	0.686	0.001	2.304	90	1.884
98	<i>Hexagenia</i> sp	0						
99	<i>Tanypus</i> sp	0						
100	<i>Tubifex tubifex</i>	41	0.169	0.713	0.001	3.947	90	0.061

Table 8: ENDRIIN - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	13	0.507	0.697	0.118	2.769	90	1.92
2	Aelosoma sp	0						
3	Amnicola limosa	20	1.045	1.581	0.069	5.254	90	4.359
4	Asellus sp	27	0.817	2.596	0.067	13.158	90	1.188
5	Aulodrilus limnobius	4	7.217	12.391	0.118	25.714	90	.
6	Aulodrilus pigueti	7	1.501	1.878	0.167	5.254	90	.
7	Aulodrilus pleuriseta	4	2.944	3.198	0.118	6.136	90	.
8	Bithynia tentaculata	10	0.292	0.18	0.081	0.645	90	0.636
9	Branchiura sowerbyi	6	0.182	0.037	0.121	0.23	90	.
10	Caenis sp	9	0.353	0.23	0.13	0.8	90	.
11	Ceraclea sp	8	25.894	55.449	0.357	160	90	.
12	Chaetogaster diaphanus	5	3.639	2.289	0.118	5.844	90	.
13	Cheumatopsyche sp	18	13.715	37.738	0.017	160	90	47.607
14	Chironomus sp	41	1.119	4.01	0.069	25.714	90	2.111
15	Cladopelma sp	4	1.63	2.433	0.091	5.254	90	.
16	Cladotanytarsus sp	5	2.22	2.325	0.357	5.254	90	.
17	Coelotanypus sp	8	0.711	1.483	0.014	4.375	90	.
18	Cricotopus sp	8	20.606	56.335	0.147	160	90	.
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	38	0.925	1.545	0.014	6.136	90	4.227
21	Dicrotendipes sp	9	0.289	0.26	0.069	0.8	90	.
22	Eukiefferiella sp	9	23.404	52.403	0.357	160	90	.
23	Gammarus fasciatus	71	4.094	19.484	0.069	160	90	5.078
24	Glossiphonia heteroclita	1	0.157		0.157	0.157	90	.
25	Glossosoma sp	7	8.904	14.945	0.205	35.119	90	.
26	Glyptotendipes sp	11	0.167	0.124	0.014	0.446	90	0.429
27	Gyraulus parvus	2	0.389	0.362	0.134	0.645	90	.
28	Helisoma anceps	0						
29	Heterotrissocladius sp	1	25.714		25.714	25.714	90	.
30	Hyaella azteca	1	13.158		13.158	13.158	90	.
31	Hydropsyche sp	12	17.455	45.946	0.069	160	90	122.536
32	Hydroptila sp	2	2.423	2.528	0.635	4.211	90	.
33	Ilyodrilus templetoni	1	0.635		0.635	0.635	90	.
34	Limnodrilus hoffmeisteri	44	0.497	1.041	0.014	5.254	90	0.829
35	Limnodrilus sp	59	0.362	0.574	0.078	3.846	90	0.476
36	Limnodrilus udekemianus	4	2.46	2.684	0.29	6.136	90	.
37	Lumbriculus variegatus	3	63.064	84.682	3.478	160	90	.
38	Manayunkia speciosa	15	3.505	6.46	0.111	25.714	90	13.968
39	Microtendipes sp	12	0.712	1.293	0.103	4.211	90	3.697
40	Mystacides sp	1	0.635		0.635	0.635	90	.
41	Nais behningi	4	51.366	73.789	4.211	160	90	.
42	Nais communis	4	2.441	1.679	0.645	4.211	90	.
43	Nais variabilis	12	4.324	9.857	0.167	35.119	90	26.16
44	Nanocladius sp	8	9.489	13.306	0.278	35.119	90	.
45	Neureclipsis sp	8	9.721	13.197	0.357	35.119	90	.
46	Oecetis sp	13	0.31	0.231	0.103	0.8	90	0.734
47	Parachironomus sp	0						
48	Paralauterborniella sp	2	2.945	3.266	0.635	5.254	90	.
49	Paratendipes sp	4	0.461	0.323	0.118	0.814	90	.
50	Phaenopsectra sp	13	1.014	1.673	0.143	5.254	90	4.837
51	Phallodrilus sp	3	14.617	17.777	3.478	35.119	90	.
52	Physella gyrina	10	1.389	1.501	0.278	4.211	90	4.137

53	<i>Piguetiella michiganensi</i>	7	1.132	1.384	0.167	4.211	90	.
54	<i>Pisidium casertanum</i>	31	3.318	7.662	0.014	35.119	90	8.051
55	<i>Pisidium compressum</i>	3	0.516	0.216	0.267	0.645	90	.
56	<i>Pisidium conventus</i>	2	0.73	0.119	0.645	0.814	90	.
57	<i>Pisidium fallax</i>	6	3.007	2.143	0.017	6.136	90	.
58	<i>Pisidium henslowanum</i>	5	2.754	3.642	0.118	8.529	90	.
59	<i>Pisidium lilljeborgi</i>	5	3	5.685	0.118	13.158	90	.
60	<i>Pisidium nitidum</i>	4	0.465	0.323	0.105	0.814	90	.
61	<i>Pisidium variabile</i>	4	0.461	0.323	0.118	0.814	90	.
62	<i>Pleurocera acuta</i>	13	6.13	11.086	0.278	35.119	90	31.357
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	38	6.846	26.436	0.091	160	90	8.094
65	<i>Pontoporeia hoyi</i>	5	2.075	3.619	0.118	8.529	90	.
66	<i>Potamothrix moldaviensis</i>	9	19.023	52.899	0.069	160	90	.
67	<i>Potamothrix vejdoskyi</i>	9	3.931	8.314	0.118	25.714	90	.
68	<i>Pristina foreli</i>	0						
69	<i>Pristina osborni</i>	4	43.279	77.826	2.769	160	90	.
70	<i>Procladius</i> sp	91	0.521	1.168	0.014	8.529	90	0.811
71	<i>Prostoma rubrum</i>	17	13.43	38.656	0.167	160	90	60.095
72	<i>Pseudocloeon</i> sp	1	1.429		1.429	1.429	90	.
73	<i>Quistadrilus multisetosus</i>	18	0.469	0.996	0.059	4.375	90	1.158
74	<i>Slavina appendiculata</i>	7	4.051	9.558	0.118	25.714	90	.
75	<i>Specaria josinae</i>	10	1.294	1.846	0.118	5.254	90	5.15
76	<i>Sphaerium nitidum</i>	5	2.075	3.619	0.118	8.529	90	.
77	<i>Sphaerium striatinum</i>	9	4.027	8.268	0.182	25.714	90	.
78	<i>Spirosperma ferox</i>	21	1.548	2.379	0.014	8.529	90	5.726
79	<i>Stenonema</i> sp	9	5.431	11.272	0.278	35.119	90	.
80	<i>Stictochironomus</i> sp	3	3.081	4.723	0.157	8.529	90	.
81	<i>Stylaria lacustris</i>	8	2.38	4.432	0.167	13.158	90	.
82	<i>Stylodrilus heringianus</i>	12	2.937	7.229	0.167	25.714	90	19.043
83	<i>Tanytarsus</i> sp	15	2.836	6.725	0.071	25.714	90	15.403
84	<i>Thienemannimyia</i> sp	8	1.232	1.644	0.017	4.211	90	.
85	<i>Tubifex</i> sp	36	0.411	0.695	0.078	3.846	90	0.58
86	<i>Turbellaria</i>	10	24.995	48.746	1.429	160	90	147.512
87	<i>Uncinaiis uncinata</i>	0						
88	<i>Valvata sincera</i>	14	3.363	9.288	0.069	35.119	90	20.187
89	<i>Valvata tricarinata</i>	18	1.013	3.04	0.069	13.158	90	2.134
90	<i>Vejdoskyella intermedia</i>	7	5.184	9.255	0.118	25.714	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	23	0.832	1.948	0.017	8.529	90	3.625
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	12	0.148	0.054	0.077	0.243	90	0.232
97	<i>Hexagenia limbata</i>	4	0.708	1.065	0.143	2.304	90	.
98	<i>Hexagenia</i> sp	0						
99	<i>Tanytus</i> sp	0						
100	<i>Tubifex tubifex</i>	22	0.309	0.536	0.014	2.5	90	0.837

Table 9: HEXACHLOROBENZENE (HCB) - Species Screening Level Concentrations
(ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	30	1.052	2.128	0.103	10.704	90	2.499
2	Aelosoma sp	5	0.459	0.733	0.057	1.765	90	.
3	Amnicola limosa	45	2.402	4.298	0.037	20	90	7.801
4	Asellus sp	26	1.824	6.445	0.017	32.895	90	3.913
5	Aulodrilus limnobius	24	7.209	28.508	0.026	140	90	10.304
6	Aulodrilus pigueti	23	2.17	4.101	0.116	17.66	90	8.2
7	Aulodrilus pleuriseta	21	7.508	30.38	0.011	140	90	3.785
8	Bithynia tentaculata	18	1.73	4.144	0.04	17.66	90	5.857
9	Branchiura sowerbyi	7	0.209	0.08	0.121	0.375	90	.
10	Caenis sp	22	1.623	2.325	0.027	8.103	90	6.836
11	Ceraclea sp	16	1.523	1.891	0.089	6.327	90	5.08
12	Chaetogaster diaphanus	27	7.203	26.821	0.03	140	90	12.095
13	Cheumatopsyche sp	26	1.934	3.981	0.037	17.66	90	7.64
14	Chironomus sp	61	1.5	5.065	0.02	38.462	90	2.662
15	Cladopelma sp	18	1.944	4.119	0.021	17.66	90	5.766
16	Cladotanytarsus sp	22	1.49	2.471	0.051	10.704	90	5.058
17	Coelotanypus sp	7	0.329	0.327	0.065	1.022	90	.
18	Cricotopus sp	30	1.893	4.144	0.011	16.364	90	5.455
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	67	3.409	17.147	0.026	140	90	3.446
21	Dicrotendipes sp	20	1.535	2.42	0.051	8.103	90	7.284
22	Eukiefferiella sp	14	1.471	1.783	0.089	6.327	90	4.83
23	Gammarus fasciatus	117	3.498	14.533	0.011	140	90	4.647
24	Glossiphonia heteroclita	2	0.052	0.037	0.026	0.078	90	.
25	Glossosoma sp	11	1.19	1.927	0.089	6.327	90	5.573
26	Glyptotendipes sp	7	0.115	0.146	0.051	0.446	90	.
27	Gyraulus parvus	14	1.602	2.734	0.037	8.103	90	7.852
28	Helisoma anceps	11	0.78	0.828	0.037	2.558	90	2.472
29	Heterotrissocladius sp	15	10.337	35.887	0.057	140	90	58
30	Hyalella azteca	14	6.496	9.829	0.064	32.895	90	24.629
31	Hydropsyche sp	13	2.227	5.602	0.05	20	90	14.531
32	Hydroptila sp	19	2.462	2.753	0.143	10.704	90	6.327
33	Ilyodrilus templetoni	11	3.028	5.019	0.037	17.66	90	15.017
34	Limnodrilus hoffmeisteri	97	2.319	14.309	0.011	140	90	2.744
35	Limnodrilus sp	59	1.164	5.006	0.02	38.462	90	2.193
36	Limnodrilus udekemianus	24	0.88	1.838	0.031	7.6	90	3.889
37	Lumbriculus variegatus	11	1.76	1.873	0.156	6.327	90	5.861
38	Manayunkia speciosa	42	6.649	23.11	0.037	140	90	8.857
39	Microtendipes sp	11	0.117	0.154	0.029	0.556	90	0.488
40	Mystacides sp	6	1.906	1.475	0.545	4.444	90	.
41	Nais behningi	8	1.72	1.249	0.045	3.333	90	.
42	Nais communis	22	7.228	29.668	0.072	140	90	2.882
43	Nais variabilis	48	4.343	20.101	0.011	140	90	4.556
44	Nanocladius sp	12	2.393	2.904	0.089	10.704	90	8.693
45	Neureclipsis sp	11	1.469	2.04	0.089	6.327	90	5.841
46	Oecetis sp	26	2.033	3.952	0.027	17.66	90	7.751
47	Parachironomus sp	15	0.57	0.742	0.011	2.727	90	1.928
48	Paralauterborniella sp	15	10.988	35.714	0.083	140	90	58.727
49	Paratendipes sp	17	1.328	1.552	0.096	5.556	90	3.778
50	Phaenopsectra sp	26	1.68	3.472	0.029	17.66	90	3.503
51	Phallodrilus sp	8	1.938	1.694	0.143	4	90	.

52	<i>Physella gyrina</i>	39	1.14	1.777	0.026	8.103	90	4
53	<i>Piguetiella michiganensi</i>	29	6.052	25.818	0.083	140	90	5.556
54	<i>Pisidium casertanum</i>	91	2.923	14.845	0.011	140	90	3.785
55	<i>Pisidium compressum</i>	12	1.001	1.04	0.011	2.558	90	2.553
56	<i>Pisidium conventus</i>	14	0.585	0.856	0.057	2.727	90	2.475
57	<i>Pisidium fallax</i>	34	6.082	23.871	0.037	140	90	5.114
58	<i>Pisidium henslowanum</i>	22	0.564	0.909	0.011	2.949	90	2.457
59	<i>Pisidium lilljeborgi</i>	18	2.672	7.764	0.057	32.895	90	10.129
60	<i>Pisidium nitidum</i>	18	8.905	32.74	0.026	140	90	17
61	<i>Pisidium variabile</i>	22	0.469	0.713	0.011	2.222	90	2.091
62	<i>Pleurocera acuta</i>	27	3.567	11.352	0.089	60	90	4.109
63	<i>Polypedilum scalaenum</i>	13	1.081	1.72	0.083	5.556	90	4.667
64	<i>Polypedilum sp</i>	61	1.424	3.093	0.02	20	90	3.256
65	<i>Pontoporeia hoyi</i>	31	0.221	0.397	0.029	2.222	90	0.283
66	<i>Potamothrix moldaviensis</i>	42	4.025	21.527	0.011	140	90	3.113
67	<i>Potamothrix vejdoskyi</i>	44	4.321	20.977	0.011	140	90	3.616
68	<i>Pristina foreli</i>	8	18.468	49.114	0.143	140	90	.
69	<i>Pristina osborni</i>	16	10.321	34.626	0.045	140	90	46.429
70	<i>Procladius sp</i>	127	1.076	2.76	0.011	20	90	2.812
71	<i>Prostoma rubrum</i>	54	5.451	20.479	0.037	140	90	6.004
72	<i>Pseudocloeon sp</i>	2	2.612	1.963	1.224	4	90	.
73	<i>Quistadrilus multisetosus</i>	29	1.989	4.408	0.022	20	90	8.103
74	<i>Slavina appendiculata</i>	22	1.121	1.204	0.116	4.444	90	3.218
75	<i>Specaria josinae</i>	23	2.456	4.064	0.102	17.66	90	8.2
76	<i>Sphaerium nitidum</i>	14	0.699	1.009	0.089	2.727	90	2.664
77	<i>Sphaerium striatinum</i>	20	1.245	1.463	0.043	4.545	90	3.933
78	<i>Spirosperma ferox</i>	61	4.141	18.083	0.011	140	90	6.989
79	<i>Stenonema sp</i>	16	0.976	1.417	0.089	4	90	3.929
80	<i>Stictochironomus sp</i>	4	4.647	8.677	0.078	17.66	90	.
81	<i>Stylaria lacustris</i>	37	2.754	6.087	0.011	32.895	90	6.585
82	<i>Stylodrilus heringianus</i>	36	1.143	1.398	0.057	6.327	90	2.885
83	<i>Tanytarsus sp</i>	54	3.235	18.984	0.018	140	90	2.646
84	<i>Thienemannimyia sp</i>	18	1.282	2.31	0.072	8.103	90	6.504
85	<i>Tubifex sp</i>	36	1.76	6.366	0.027	38.462	90	2.944
86	<i>Turbellaria</i>	37	2.356	3.401	0.045	17.66	90	5.811
87	<i>Uncinaiis uncinata</i>	20	8.115	31.082	0.083	140	90	5.333
88	<i>Valvata sincera</i>	47	1.866	4.151	0.034	20	90	5.076
89	<i>Valvata tricarinata</i>	44	2.625	6.311	0.036	32.895	90	9.404
90	<i>Vejdoskyella intermedia</i>	50	3.731	19.711	0.011	140	90	3.333
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	24	0.323	1.012	0.018	5.054	90	0.329
94	<i>Cricotopus bicinctus</i>	1	0.161		0.161	0.161	90	.
95	<i>Ephemera sp</i>	0						
96	<i>Helobdella stagnalis</i>	18	0.259	0.474	0.019	1.544	90	1.544
97	<i>Hexagenia limbata</i>	7	2.64	3.653	0.02	8.103	90	.
98	<i>Hexagenia sp</i>	0						
99	<i>Tanypus sp</i>	0						
100	<i>Tubifex tubifex</i>	27	0.115	0.167	0.012	0.841	90	0.237

Table 10: HEPTACHLOR EPOXIDE - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	8	0.126	0.044	0.03	0.165	90	.
2	Aelosoma sp	0						
3	Amnicola limosa	12	0.201	0.229	0.006	0.703	90	0.675
4	Asellus sp	29	0.555	1.317	0.003	6.579	90	0.789
5	Aulodrilus limnobius	2	0.018	0.016	0.006	0.03	90	.
6	Aulodrilus pigueti	1	0.019		0.019	0.019	90	.
7	Aulodrilus pleuriseta	2	0.018	0.016	0.006	0.03	90	.
8	Bithynia tentaculata	10	0.254	0.142	0.006	0.556	90	0.531
9	Branchiura sowerbyi	6	0.182	0.037	0.121	0.23	90	.
10	Caenis sp	6	0.208	0.142	0.045	0.417	90	.
11	Ceraclea sp	0						
12	Chaetogaster diaphanus	1	0.03		0.03	0.03	90	.
13	Cheumatopsyche sp	6	0.065	0.079	0.003	0.2	90	.
14	Chironomus sp	36	1.537	6.37	0.016	38.462	90	2.226
15	Cladopelma sp	4	0.207	0.375	0.016	0.769	90	.
16	Cladotanytarsus sp	3	0.086	0.078	0.006	0.161	90	.
17	Coelotanypus sp	10	0.203	0.22	0.004	0.703	90	0.663
18	Cricotopus sp	12	1.106	1.721	0.064	4.545	90	4.545
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	31	0.233	0.229	0.003	0.893	90	0.598
21	Dicrotendipes sp	11	0.163	0.125	0.003	0.347	90	0.341
22	Eukiefferiella sp	0						
23	Gammarus fasciatus	54	1.066	5.228	0.003	38.462	90	1.222
24	Glossiphonia heteroclita	1	0.314		0.314	0.314	90	.
25	Glossosoma sp	3	0.13	0.032	0.103	0.165	90	.
26	Glyptotendipes sp	13	0.144	0.142	0.003	0.446	90	0.375
27	Gyraulus parvus	2	0.214	0.075	0.161	0.267	90	.
28	Helisoma anceps	0						
29	Heterotrissocladius sp	0						
30	Hyaella azteca	13	1.782	2.256	0.064	6.579	90	5.766
31	Hydropsyche sp	2	0.098	0.008	0.093	0.103	90	.
32	Hydroptila sp	0						
33	Ilyodrilus templetoni	0						
34	Limnodrilus hoffmeisteri	39	0.159	0.232	0.003	0.789	90	0.606
35	Limnodrilus sp	59	1.247	4.994	0.078	38.462	90	2.193
36	Limnodrilus udekemianus	2	0.153	0.012	0.145	0.161	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	3	0.268	0.046	0.222	0.314	90	.
39	Microtendipes sp	10	0.271	0.107	0.19	0.556	90	0.531
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	1	0.161		0.161	0.161	90	.
43	Nais variabilis	0						
44	Nanocladius sp	0						
45	Neureclipsis sp	0						
46	Oecetis sp	12	0.283	0.116	0.19	0.556	90	0.532
47	Parachironomus sp	2	0.016	0.014	0.006	0.026	90	.
48	Paralauterborniella sp	0						
49	Paratendipes sp	4	0.054	0.072	0.006	0.161	90	.
50	Phaenopsectra sp	5	0.108	0.044	0.036	0.145	90	.
51	Phallodrilus sp	0						

52	<i>Physella gyrina</i>	2	0.146	0.076	0.093	0.2	90	.
53	<i>Piguetiella michiganensi</i>	1	0.161		0.161	0.161	90	.
54	<i>Pisidium casertanum</i>	15	0.137	0.229	0.004	0.882	90	0.578
55	<i>Pisidium compressum</i>	2	0.084	0.11	0.006	0.161	90	.
56	<i>Pisidium conventus</i>	2	0.09	0.1	0.019	0.161	90	.
57	<i>Pisidium fallax</i>	1	0.004		0.004	0.004	90	.
58	<i>Pisidium henslowanum</i>	4	0.27	0.414	0.006	0.882	90	.
59	<i>Pisidium lilljeborgi</i>	5	1.359	2.919	0.006	6.579	90	.
60	<i>Pisidium nitidum</i>	4	0.317	0.335	0.019	0.789	90	.
61	<i>Pisidium variabile</i>	4	0.054	0.072	0.006	0.161	90	.
62	<i>Pleurocera acuta</i>	0						
63	<i>Polypedium scalaenum</i>	0						
64	<i>Polypedium sp</i>	23	0.288	0.333	0.023	1.563	90	0.714
65	<i>Pontoporeia hoyi</i>	5	0.22	0.376	0.006	0.882	90	.
66	<i>Potamothrix moldaviensis</i>	5	0.071	0.061	0.018	0.161	90	.
67	<i>Potamothrix vej dovskyi</i>	6	0.079	0.08	0.019	0.2	90	.
68	<i>Pristina foreli</i>	0						
69	<i>Pristina osborni</i>	0						
70	<i>Procladius sp</i>	86	0.425	0.722	0.003	3.425	90	1.54
71	<i>Prostoma rubrum</i>	0						
72	<i>Pseudocloeon sp</i>	0						
73	<i>Quistadrilus multisetosus</i>	12	0.287	0.282	0.004	0.789	90	0.764
74	<i>Slavina appendiculata</i>	2	0.024	0.007	0.019	0.03	90	.
75	<i>Specaria josinae</i>	3	0.066	0.084	0.006	0.161	90	.
76	<i>Sphaerium nitidum</i>	5	0.22	0.376	0.006	0.882	90	.
77	<i>Sphaerium striatinum</i>	2	0.005	0.003	0.003	0.006	90	.
78	<i>Spirosperma ferox</i>	11	0.213	0.327	0.004	0.882	90	0.864
79	<i>Stenonema sp</i>	0						
80	<i>Stictochironomus sp</i>	3	0.584	0.285	0.314	0.882	90	.
81	<i>Stylaria lacustris</i>	3	2.417	3.605	0.336	6.579	90	.
82	<i>Stylodrilus heringianus</i>	2	1.042	1.246	0.161	1.923	90	.
83	<i>Tanytarsus sp</i>	16	0.136	0.236	0.003	0.882	90	0.527
84	<i>Thienemannimyia sp</i>	4	0.031	0.04	0.004	0.089	90	.
85	<i>Tubifex sp</i>	36	1.855	6.349	0.103	38.462	90	2.944
86	<i>Turbellaria</i>	0						
87	<i>Uncinatis uncinata</i>	0						
88	<i>Valvata sincera</i>	8	0.128	0.138	0.006	0.375	90	.
89	<i>Valvata tricarinata</i>	13	0.705	1.77	0.03	6.579	90	4.17
90	<i>Vejdovskyella intermedia</i>	4	0.054	0.072	0.006	0.161	90	.
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	28	0.133	0.235	0.003	0.882	90	0.618
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera sp</i>	0						
96	<i>Helobdella stagnalis</i>	14	0.232	0.092	0.003	0.346	90	0.341
97	<i>Hexagenia limbata</i>	7	0.376	0.853	0.003	2.304	90	.
98	<i>Hexagenia sp</i>	0						
99	<i>Tanypus sp</i>	0						
100	<i>Tubifex tubifex</i>	17	0.187	0.255	0.004	0.789	90	0.773

Table 11: MIREX - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	19	7.392	20.095	0.148	82.083	90	39.091
2	Aelosoma sp	2	0.232	0.261	0.048	0.417	90	.
3	Amnicola limosa	14	13.787	25.054	0.076	82.083	90	65.708
4	Asellus sp	16	1.543	3.426	0.078	13.158	90	7.684
5	Aulodrilus limnobius	5	9.029	16.873	0.076	39.091	90	.
6	Aulodrilus pigueti	11	30.22	46.593	0.097	144.737	90	132.206
7	Aulodrilus pleuriseta	11	9.091	17.722	0.048	49.333	90	47.285
8	Bithynia tentaculata	12	0.72	1.1	0.076	3.704	90	3.231
9	Branchiura sowerbyi	6	1.042	2.105	0.121	5.338	90	.
10	Caenis sp	9	26.176	51.899	0.048	144.737	90	.
11	Ceraclea sp	5	16.912	36.433	0.446	82.083	90	.
12	Chaetogaster diaphanus	18	3.587	9.121	0.111	39.091	90	12.299
13	Cheumatopsyche sp	11	26.802	47.252	0.347	144.737	90	132.206
14	Chironomus sp	38	7.624	27.019	0.081	144.737	90	7.221
15	Cladopelma sp	9	21.11	29.16	0.51	82.083	90	.
16	Cladotanytarsus sp	8	40.957	51.156	0.806	144.737	90	.
17	Coelotanypus sp	6	6.69	15.873	0.13	39.091	90	.
18	Cricotopus sp	21	4.976	17.716	0.056	82.083	90	4.545
19	Cricotopus vierriensis	0						.
20	Cryptochironomus sp	38	6.993	26.497	0.078	144.737	90	5.736
21	Dicrotendipes sp	12	14.75	27.143	0.078	82.083	90	72.258
22	Eukiefferiella sp	5	1.236	1.412	0.446	3.704	90	.
23	Gammarus fasciatus	60	6.781	22.758	0.056	144.737	90	8.924
24	Glossiphonia heteroclita	1	0.078		0.078	0.078	90	.
25	Glossosoma sp	5	0.568	0.158	0.446	0.825	90	.
26	Glyptotendipes sp	6	0.176	0.133	0.103	0.446	90	.
27	Gyraulus parvus	6	14.636	33.068	0.134	82.083	90	.
28	Helisoma anceps	6	16.063	22.071	0.362	49.333	90	.
29	Heterotrissocladius sp	7	0.477	0.319	0.048	1.042	90	.
30	Hyaella azteca	14	2.168	3.582	0.064	13.158	90	8.852
31	Hydropsyche sp	2	0.446	0	0.446	0.446	90	.
32	Hydroptila sp	4	43.252	32.776	2.5	82.083	90	.
33	Ilyodrilus templetoni	4	58.163	68.734	2.128	144.737	90	.
34	Limnodrilus hoffmeisteri	36	9.615	28.506	0.048	144.737	90	42.164
35	Limnodrilus sp	59	1.346	5.014	0.078	38.462	90	2.304
36	Limnodrilus udekemianus	7	13.145	21.429	0.446	49.333	90	.
37	Lumbriculus variegatus	0						.
38	Manayunkia speciosa	12	1.656	2.631	0.078	9.322	90	7.637
39	Microtendipes sp	10	0.166	0.142	0.078	0.556	90	0.522
40	Mystacides sp	1	3.704		3.704	3.704	90	.
41	Nais behningi	0						.
42	Nais communis	9	9.713	27.139	0.362	82.083	90	.
43	Nais variabilis	28	7.208	18.626	0.056	82.083	90	40.115
44	Nanocladius sp	5	17.543	36.105	0.347	82.083	90	.
45	Neureclipsis sp	4	2.838	4.335	0.446	9.322	90	.
46	Oecetis sp	15	0.666	1.002	0.078	3.704	90	2.758
47	Parachironomus sp	13	21.675	44.737	0.048	144.737	90	119.675
48	Paralauterborniella sp	5	3.068	3.739	0.417	9.322	90	.
49	Paratendipes sp	8	0.688	0.562	0.076	1.389	90	.
50	Phaenopsectra sp	13	1.846	2.551	0.347	9.322	90	7.093
51	Phallodrilus sp	3	64.383	71.162	9.322	144.737	90	.
52	Physella gyrina	10	0.554	0.351	0.048	1.136	90	1.136

53	<i>Piguetiella michiganensi</i>	21	2.792	8.346	0.417	39.091	90	3.278
54	<i>Pisidium casertanum</i>	44	1.838	5.945	0.048	39.091	90	3.102
55	<i>Pisidium compressum</i>	5	0.319	0.362	0.048	0.806	90	.
56	<i>Pisidium conventus</i>	13	0.702	0.661	0.048	2.5	90	1.976
57	<i>Pisidium fallax</i>	5	17.239	36.255	0.481	82.083	90	.
58	<i>Pisidium henslowanum</i>	19	0.468	0.323	0.048	1.136	90	0.893
59	<i>Pisidium lilljeborgi</i>	16	1.293	3.183	0.048	13.158	90	4.743
60	<i>Pisidium nitidum</i>	10	0.487	0.286	0.097	0.893	90	0.884
61	<i>Pisidium variabile</i>	19	0.752	0.926	0.048	3.704	90	2.5
62	<i>Pleurocera acuta</i>	7	0.696	0.348	0.347	1.136	90	.
63	<i>Polypedilum scalaenum</i>	13	1	0.578	0.417	2.5	90	2.056
64	<i>Polypedilum sp</i>	32	4.651	15.746	0.074	82.083	90	7.65
65	<i>Pontoporeia hoyi</i>	29	0.537	0.303	0.076	1.19	90	1
66	<i>Potamothrix moldaviensis</i>	23	0.499	0.285	0.048	1.042	90	0.938
67	<i>Potamothrix vej dovskyi</i>	24	0.982	1.855	0.048	9.322	90	1.944
68	<i>Pristina foreli</i>	2	44.212	7.242	39.091	49.333	90	.
69	<i>Pristina osborni</i>	1	49.333		49.333	49.333	90	.
70	<i>Procladius sp</i>	75	3.074	11.723	0.048	82.083	90	3.37
71	<i>Prostoma rubrum</i>	22	5.386	12.828	0.048	49.333	90	30.16
72	<i>Pseudocloeon sp</i>	0						
73	<i>Quistadrilus multisetosus</i>	3	0.225	0.224	0.048	0.476	90	.
74	<i>Slavina appendiculata</i>	12	27.043	45.622	0.097	144.737	90	125.941
75	<i>Specaria josinae</i>	14	18.281	39.569	0.076	144.737	90	97.035
76	<i>Sphaerium nitidum</i>	12	0.435	0.281	0.076	0.806	90	0.792
77	<i>Sphaerium striatinum</i>	8	0.693	0.379	0.076	1.136	90	.
78	<i>Spirosperma ferox</i>	27	2.514	7.553	0.048	39.091	90	4.864
79	<i>Stenonema sp</i>	8	1.743	3.08	0.347	9.322	90	.
80	<i>Stictochironomus sp</i>	4	0.874	0.88	0.078	2.128	90	.
81	<i>Stylaria lacustris</i>	21	16.469	36.17	0.048	144.737	90	75.533
82	<i>Stylodrilus heringianus</i>	23	1.09	0.993	0.048	3.75	90	3.222
83	<i>Tanytarsus sp</i>	35	8.267	28.105	0.076	144.737	90	17.886
84	<i>Thienemannimyia sp</i>	11	5.693	14.509	0.362	49.333	90	40.217
85	<i>Tubifex sp</i>	36	1.854	6.343	0.103	38.462	90	2.944
86	<i>Turbellaria</i>	6	54.449	52.823	2.128	144.737	90	.
87	<i>Uncinatis uncinata</i>	15	0.857	0.358	0.417	1.389	90	1.389
88	<i>Valvata sincera</i>	22	5.05	12.93	0.048	49.333	90	30.16
89	<i>Valvata tricarinata</i>	21	7.627	20.198	0.078	82.083	90	42.098
90	<i>Vejdovskyella intermedia</i>	37	0.909	1.505	0.048	9.322	90	1.389
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	10	0.466	0.465	0.064	1.389	90	1.35
94	<i>Cricotopus bicinctus</i>	1	0.806		0.806	0.806	90	.
95	<i>Ephemera sp</i>	0						
96	<i>Helobdella stagnalis</i>	12	0.176	0.09	0.078	0.336	90	0.336
97	<i>Hexagenia limbata</i>	2	1.253	1.486	0.202	2.304	90	.
98	<i>Hexagenia sp</i>	0						
99	<i>Tanypus sp</i>	0						
100	<i>Tubifex tubifex</i>	7	0.612	0.387	0.085	1	90	.

Table 12: Total PCB - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	53	15.199	15.619	0.103	59.191	90	42.743
2	Aelosoma sp	4	16.154	15.969	1.667	34.615	90	.
3	Amnicola limosa	76	11.299	27.424	0.128	196	90	22.386
4	Asellus sp	141	7.992	21.869	0.04	196	90	15.124
5	Aulodrilus limnobius	15	113.653	383.941	1.667	1500	90	643.404
6	Aulodrilus pigueti	29	17.117	24.409	0.455	119.492	90	32.051
7	Aulodrilus pleuriseta	28	64.809	282.232	0.227	1500	90	47.949
8	Bithynia tentaculata	59	4.102	10.287	0.04	72.34	90	9.375
9	Branchiura sowerbyi	30	5.798	14.638	0.121	64.84	90	8.478
10	Caenis sp	34	6.811	8.159	0.065	28.947	90	22.343
11	Ceraclea sp	18	34.427	66.979	1.786	285.065	90	117.588
12	Chaetogaster diaphanus	28	77.064	284.592	0.111	1500	90	136.049
13	Cheumatopsyche sp	32	29.008	54.429	0.667	285.065	90	90.988
14	Chironomus sp	213	7	16.35	0.04	173.272	90	22.106
15	Cladopelma sp	20	19.288	28.497	0.156	119.492	90	67.539
16	Cladotanytarsus sp	24	15.235	24.629	0.263	119.492	90	34.474
17	Coelotanytus sp	33	3.605	4.701	0.065	22.449	90	7.419
18	Cricotopus sp	82	16.345	42.237	0.064	281.154	90	34.154
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	175	17.288	116.052	0.04	1500	90	21.619
21	Dicrotendipes sp	62	5.979	8.953	0.028	53.034	90	19.211
22	Eukiefferiella sp	15	43.256	71.194	1.786	285.065	90	173.414
23	Gammarus fasciatus	264	20.782	110.066	0.028	1500	90	32.222
24	Glossiphonia heteroclita	8	1.245	1.387	0.078	4.082	90	.
25	Glossosoma sp	22	21.918	23.84	0.103	98.98	90	55.138
26	Glyptotendipes sp	43	3.138	4.504	0.051	23.214	90	7.921
27	Gyraulus parvus	25	3.876	6.288	0.067	22.685	90	16.653
28	Helisoma anceps	11	9.758	5.743	3.148	22.685	90	21.404
29	Heterotrissocladius sp	13	121.126	414.343	0.833	1500	90	908.889
30	Hyalella azteca	80	5.364	14.421	0.064	92.105	90	8.054
31	Hydropsyche sp	22	16.927	23.366	0.208	98.98	90	42.42
32	Hydroptila sp	18	22.281	22.446	3.646	98.98	90	48.469
33	Ilyodrilus templetoni	15	17.491	17.587	2.353	72.34	90	46.305
34	Limnodrilus hoffmeisteri	174	17.845	116.386	0.028	1500	90	22.056
35	Limnodrilus sp	298	12.849	31.143	0.04	281.154	90	33.615
36	Limnodrilus udekemianus	38	10.01	15.765	0.094	81.739	90	22.277
37	Lumbriculus variegatus	9	31.137	29.713	0.769	98.98	90	.
38	Manayunkia speciosa	50	60.097	241.139	0.056	1500	90	41.8
39	Microtendipes sp	53	1.928	2.38	0.048	12.526	90	5.557
40	Mystacides sp	10	9.63	8.462	1.042	22.685	90	22.56
41	Nais behningi	8	22.208	10.929	7.317	40	90	.
42	Nais communis	20	84.379	333.306	1.923	1500	90	31.279
43	Nais variabilis	51	43.076	209.258	0.278	1500	90	38.923
44	Nanocladius sp	14	33.916	73.27	1.786	285.065	90	163.532
45	Neureclipsis sp	8	69.034	98.904	1.786	285.065	90	.
46	Oecetis sp	73	6.177	15.16	0.048	98.98	90	14.778
47	Parachironomus sp	20	22.298	71.174	0.284	323.158	90	27.703
48	Paralauterborniella sp	12	142.818	428.626	1.667	1500	90	1085.847
49	Paratendipes sp	15	10.507	11.226	0.278	40	90	29.355
50	Phaenopsectra sp	44	18.041	23.127	0.103	119.492	90	51.705
51	Phallodrilus sp	7	36.159	38.394	8.182	119.492	90	.
52	Physella gyrina	50	8.025	12.194	0.111	42.857	90	32.864

53	<i>Piguetiella michiganensi</i>	29	59.858	277.134	0.278	1500	90	32.051
54	<i>Pisidium casertanum</i>	128	22.903	135.587	0.111	1500	90	22.301
55	<i>Pisidium compressum</i>	13	10.259	11.523	0.756	40	90	32.903
56	<i>Pisidium conventus</i>	14	6.198	6.617	0.111	22.258	90	19.65
57	<i>Pisidium fallax</i>	33	61.452	258.765	1.308	1500	90	45.12
58	<i>Pisidium henslowanum</i>	23	9.611	11.804	0.111	46.629	90	28.134
59	<i>Pisidium lilljeborgi</i>	28	11.115	23.435	0.111	92.105	90	29.243
60	<i>Pisidium nitidum</i>	22	75.269	318.335	0.111	1500	90	29.113
61	<i>Pisidium variabile</i>	22	7.827	9.843	0.111	40	90	22.557
62	<i>Pleurocera acuta</i>	23	63.841	184.246	0.667	866.667	90	188.182
63	<i>Polypedilum scalaenum</i>	13	4.914	5.661	0.278	21.905	90	17.143
64	<i>Polypedilum</i> sp	144	12.862	28.48	0.056	285.065	90	27.224
65	<i>Pontoporeia hoyi</i>	41	6.31	8.113	0.111	46.629	90	15.114
66	<i>Potamotheirus moldaviensis</i>	55	38.096	204.409	0.357	1500	90	22.237
67	<i>Potamotheirus vejdoskyi</i>	50	47.15	215.023	0.111	1500	90	31.772
68	<i>Pristina foreli</i>	6	260.983	607.021	8.182	1500	90	.
69	<i>Pristina osborni</i>	15	120.464	382.379	4.673	1500	90	659.388
70	<i>Procladius</i> sp	382	12.924	33.859	0.04	323.158	90	27.257
71	<i>Prostoma rubrum</i>	52	68.3	237.782	0.111	1500	90	90.988
72	<i>Pseudocloeon</i> sp	2	26.612	21.762	11.224	42	90	.
73	<i>Quistadrius multisetosus</i>	69	9.346	24.743	0.135	196	90	22.111
74	<i>Slavina appendiculata</i>	21	12.719	9.972	1.786	34.615	90	31.43
75	<i>Specaria josinae</i>	27	20.049	24.884	1.667	119.492	90	46.468
76	<i>Sphaerium nitidum</i>	15	6.257	5.969	0.111	22.258	90	16.103
77	<i>Sphaerium striatinum</i>	26	12.892	38.54	0.028	196	90	28.156
78	<i>Spirosperma ferox</i>	73	34.661	177.731	0.111	1500	90	36.821
79	<i>Stenonema</i> sp	14	22.666	31.685	1.786	119.492	90	81.174
80	<i>Stictochironomus</i> sp	18	5.853	16.806	0.078	72.34	90	16.499
81	<i>Stylaria lacustris</i>	49	14.335	20.559	0.278	92.105	90	28.947
82	<i>Stylodrilus heringianus</i>	48	23.607	53.903	0.476	281.154	90	43.234
83	<i>Tanytarsus</i> sp	87	22.475	160.417	0.094	1500	90	17.095
84	<i>Thienemannimyia</i> sp	25	23.232	65.658	0.128	323.158	90	60.361
85	<i>Tubifex</i> sp	179	18.001	38.415	0.051	281.154	90	38.462
86	<i>Turbellaria</i>	34	32.346	51.702	1.667	285.065	90	85.66
87	<i>Uncinatis uncinata</i>	20	82.218	333.854	0.278	1500	90	38.222
88	<i>Valvata sincera</i>	71	8.663	17.551	0.067	119.492	90	19.939
89	<i>Valvata tricarinata</i>	92	7.488	16.068	0.051	92.105	90	15.807
90	<i>Vejdoskyella intermedia</i>	46	41.209	220.629	0.111	1500	90	22.233
91	<i>Elliptio complanata</i>	1	0.278		0.278	0.278	90	.
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	82	9.834	41.437	0.064	323.158	90	11.164
94	<i>Cricotopus bicinctus</i>	5	1.002	1.254	0.256	3.226	90	.
95	<i>Ephemera</i> sp	2	1.646	0.153	1.538	1.754	90	.
96	<i>Helobdella stagnalis</i>	73	2.586	3.388	0.04	18.214	90	6.212
97	<i>Hexagenia limbata</i>	30	14.547	36.045	0.028	173.272	90	44.055
98	<i>Hexagenia</i> sp	1	1.724		1.724	1.724	90	.
99	<i>Tanypus</i> sp	0						
100	<i>Tubifex tubifex</i>	59	7.869	26.033	0.1	196	90	18.214

Table 12a: PCB-1254 - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	6	19.531	6.009	9.055	27.306	90	.
2	Aelosoma sp	0						
3	Amnicola limosa	1	1.415		1.415	1.415	90	.
4	Asellus sp	15	7.706	10.672	1.415	38.356	90	31.726
5	Aulodrilus limnobius	0						
6	Aulodrilus pigueti	0						
7	Aulodrilus pleuriseta	0						
8	Bithynia tentaculata	8	2.98	2.364	0.556	7.742	90	.
9	Branchiura sowerbyi	6	3.633	2.716	1.553	8.79	90	.
10	Caenis sp	3	4.167	2.093	2.279	6.417	90	.
11	Ceraclea sp	0						
12	Chaetogaster diaphanus	0						
13	Cheumatopsyche sp	0						
14	Chironomus sp	30	7.846	10.385	0.556	38.462	90	25.463
15	Cladopelma sp	0						
16	Cladotanytarsus sp	0						
17	Coelotanypus sp	5	3.283	1.009	2.279	4.806	90	.
18	Cricotopus sp	12	11.571	11.654	0.064	33.077	90	31.346
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	16	4.131	2.995	0.556	9.018	90	8.858
21	Dicrotendipes sp	6	7.032	9.991	1.848	27.306	90	.
22	Eukiefferiella sp	0						
23	Gammarus fasciatus	28	9.258	11.041	1.553	38.462	90	32.836
24	Glossiphonia heteroclita	1	1.884		1.884	1.884	90	.
25	Glossosoma sp	3	18.116	9.126	9.055	27.306	90	.
26	Glyptotendipes sp	6	3.819	2.791	1.736	9.018	90	.
27	Gyraulus parvus	1	4.806		4.806	4.806	90	.
28	Helisoma anceps	0						
29	Heterotrissocladius sp	0						
30	Hyaella azteca	13	2.65	1.895	0.064	6.579	90	5.766
31	Hydropsyche sp	0						
32	Hydroptila sp	0						
33	Ilyodrilus templetoni	0						
34	Limnodrilus hoffmeisteri	0						
35	Limnodrilus sp	59	12.072	16.418	0.556	106.667	90	32.222
36	Limnodrilus udekemianus	1	19.014		19.014	19.014	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	3	2.282	0.821	1.736	3.226	90	.
39	Microtendipes sp	10	2.552	1.686	0.556	6.057	90	5.932
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	0						
43	Nais variabilis	0						
44	Nanocladius sp	0						
45	Neureclipsis sp	0						
46	Oecetis sp	11	3.29	2.159	0.556	7.619	90	7.307
47	Parachironomus sp	0						
48	Paralauterborniella sp	0						
49	Paratendipes sp	0						
50	Phaenopsectra sp	4	18.803	7.493	9.055	27.306	90	.
51	Phallodrilus sp	0						
52	Physella gyrina	0						
53	Piguetiella michiganensi	0						

54	<i>Pisidium casertanum</i>	0						
55	<i>Pisidium compressum</i>	0						
56	<i>Pisidium conventus</i>	0						
57	<i>Pisidium fallax</i>	0						
58	<i>Pisidium henslowanum</i>	0						
59	<i>Pisidium lilljeborgi</i>	1	6.579		6.579	6.579	90	.
60	<i>Pisidium nitidum</i>	1	3.077		3.077	3.077	90	.
61	<i>Pisidium variabile</i>	0						
62	<i>Pleurocera acuta</i>	0						
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	21	9.378	7.935	1.039	27.306	90	21.278
65	<i>Pontoporeia hoyi</i>	0						
66	<i>Potamothrix moldaviensis</i>	0						
67	<i>Potamothrix vejdoskyi</i>	0						
68	<i>Pristina foreli</i>	0						
69	<i>Pristina osborni</i>	0						
70	<i>Procladius</i> sp	45	13.614	17.876	0.556	106.667	90	32.564
71	<i>Prostoma rubrum</i>	0						
72	<i>Pseudocloeon</i> sp	0						
73	<i>Quistadrilus multisetosus</i>	0						
74	<i>Slavina appendiculata</i>	0						
75	<i>Specaria josinae</i>	0						
76	<i>Sphaerium nitidum</i>	0						
77	<i>Sphaerium striatinum</i>	0						
78	<i>Spirosperma ferox</i>	0						
79	<i>Stenonema</i> sp	0						
80	<i>Stictochironomus</i> sp	2	1.22	0.939	0.556	1.884	90	.
81	<i>Stylaria lacustris</i>	3	3.535	2.636	2.013	6.579	90	.
82	<i>Stylodrilus heringianus</i>	1	33.077		33.077	33.077	90	.
83	<i>Tanytarsus</i> sp	2	4.669	1.223	3.804	5.533	90	.
84	<i>Thienemannimyia</i> sp	0						
85	<i>Tubifex</i> sp	36	16.652	19.377	1.553	106.667	90	35.37
86	<i>Turbellaria</i>	0						
87	<i>Uncinaxis uncinata</i>	0						
88	<i>Valvata sincera</i>	1	4.806		4.806	4.806	90	.
89	<i>Valvata tricarinata</i>	9	2.978	2.296	0.556	6.579	90	.
90	<i>Vejdoskyella intermedia</i>	0						
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	4	0.551	0.563	0.064	1.039	90	.
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	12	2.916	1.763	1.687	7.742	90	6.861
97	<i>Hexagenia limbata</i>	2	14.725	15.671	3.644	25.806	90	.
98	<i>Hexagenia</i> sp	0						
99	<i>Tanypus</i> sp	0						
100	<i>Tubifex tubifex</i>	0						

Table 12b: PCB-1248 - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	6	0.136	0.022	0.103	0.165	90	.
2	Aelosoma sp	0						
3	Amnicola limosa	1	0.314		0.314	0.314	90	.
4	Asellus sp	15	1.841	2.039	0.121	6.579	90	5.97
5	Aulodrilus limnobius	0						
6	Aulodrilus pigueti	0						
7	Aulodrilus pleuriseta	0						
8	Bithynia tentaculata	8	1.358	1.844	0.219	5.565	90	.
9	Branchiura sowerbyi	6	0.182	0.037	0.121	0.23	90	.
10	Caenis sp	3	2.131	1.954	0.272	4.167	90	.
11	Ceraclea sp	0						
12	Chaetogaster diaphanus	0						
13	Cheumatopsyche sp	0						
14	Chironomus sp	30	5.787	19.358	0.111	101.382	90	6.378
15	Cladopelma sp	0						
16	Cladotanytarsus sp	0						
17	Coelotanypus sp	5	0.841	0.814	0.185	1.953	90	.
18	Cricotopus sp	12	23.867	71.068	0.064	248.077	90	182.188
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	16	1.492	1.592	0.161	5.565	90	4.586
21	Dicrotendipes sp	6	1.531	1.103	0.121	2.892	90	.
22	Eukiefferiella sp	0						
23	Gammarus fasciatus	28	6.353	19.966	0.111	101.382	90	9.668
24	Glossiphonia heteroclita	1	2.198		2.198	2.198	90	.
25	Glossosoma sp	3	0.13	0.032	0.103	0.165	90	.
26	Glyptotendipes sp	6	1.775	0.811	0.446	2.892	90	.
27	Gyraulus parvus	1	1.469		1.469	1.469	90	.
28	Helisoma anceps	0						
29	Heterotrissocladius sp	0						
30	Hyaella azteca	13	1.782	2.256	0.064	6.579	90	5.766
31	Hydropsyche sp	0						
32	Hydroptila sp	0						
33	Ilyodrilus templetoni	0						
34	Limnodrilus hoffmeisteri	0						
35	Limnodrilus sp	59	11.627	39.658	0.078	248.077	90	28.446
36	Limnodrilus udekemianus	1	0.145		0.145	0.145	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	3	2.275	0.582	1.736	2.892	90	.
39	Microtendipes sp	10	2.127	1.713	0.219	6.468	90	6.111
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	0						
43	Nais variabilis	0						
44	Nanocladius sp	0						
45	Neureclipsis sp	0						
46	Oecetis sp	11	1.691	1.837	0.219	6.468	90	5.753
47	Parachironomus sp	0						
48	Paralauterborniella sp	0						
49	Paratendipes sp	0						
50	Phaenopsectra sp	4	0.127	0.019	0.103	0.145	90	.
51	Phallodrilus sp	0						
52	Physella gyrina	0						

53	Piguetiella michiganensi	0						
54	Pisidium casertanum	0						
55	Pisidium compressum	0						
56	Pisidium conventus	0						
57	Pisidium fallax	0						
58	Pisidium henslowanum	0						
59	Pisidium lilljeborgi	1	6.579		6.579	6.579	90	.
60	Pisidium nitidum	1	0.296		0.296	0.296	90	.
61	Pisidium variabile	0						
62	Pleurocera acuta	0						
63	Polypedilum scalaenum	0						
64	Polypedilum sp	21	0.617	1.045	0.074	4.167	90	2.626
65	Pontoporeia hoyi	0						
66	Potamothrix moldaviensis	0						
67	Potamothrix vejdoskyi	0						
68	Pristina foreli	0						
69	Pristina osborni	0						
70	Procladius sp	45	14.216	44.875	0.078	248.077	90	57.62
71	Prostoma rubrum	0						
72	Pseudocloeon sp	0						
73	Quistadrilus multisetosus	0						
74	Slavina appendiculata	0						
75	Specaria josinae	0						
76	Sphaerium nitidum	0						
77	Sphaerium striatinum	0						
78	Spirosperma ferox	0						
79	Stenonema sp	0						
80	Stictochironomus sp	2	1.377	1.161	0.556	2.198	90	.
81	Stylaria lacustris	3	2.417	3.605	0.336	6.579	90	.
82	Stylodrilus heringianus	1	248.077		248.077	248.077	90	.
83	Tanytarsus sp	2	0.303	0.044	0.272	0.333	90	.
84	Thienemannimyia sp	0						
85	Tubifex sp	36	18.484	49.812	0.078	248.077	90	102.968
86	Turbellaria	0						
87	Uncinaxis uncinata	0						
88	Valvata sincera	1	1.469		1.469	1.469	90	.
89	Valvata tricarinata	9	2.317	2.565	0.161	6.579	90	.
90	Vejdoskyella intermedia	0						
91	Elliptio complanata	0						
92	Sphaerium simile	0						
93	Chironomus plumosus	4	0.069	0.006	0.064	0.074	90	.
94	Cricotopus bicinctus	0						
95	Ephemera sp	0						
96	Helobdella stagnalis	12	1.413	1.606	0.174	5.565	90	4.763
97	Hexagenia limbata	2	50.792	71.545	0.202	101.382	90	.
98	Hexagenia sp	0						
99	Tanytus sp	0						
100	Tubifex tubifex	0						

Table 12c: PCB-1016 - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	6	20.687	7.556	8.953	26.173	90	.
2	Aelosoma sp	0						
3	Amnicola limosa	1	0.314		0.314	0.314	90	.
4	Asellus sp	15	8.598	23.378	0.202	92.105	90	44.808
5	Aulodrilus limnobius	0						
6	Aulodrilus pigueti	0						
7	Aulodrilus pleuriseta	0						
8	Bithynia tentaculata	8	0.631	0.628	0.202	2.061	90	.
9	Branchiura sowerbyi	6	1.539	0.999	0.51	3.292	90	.
10	Caenis sp	3	1.005	1.223	0.272	2.417	90	.
11	Ceraclea sp	0						
12	Chaetogaster diaphanus	0						
13	Cheumatopsyche sp	0						
14	Chironomus sp	30	4.265	10.479	0.202	46.083	90	5.561
15	Cladopelma sp	0						
16	Cladotanytarsus sp	0						
17	Coelotanypus sp	5	1.134	0.946	0.326	2.249	90	.
18	Cricotopus sp	12	9.905	9.832	1.271	25.806	90	25.555
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	16	1.053	1.185	0.202	3.482	90	3.349
21	Dicrotendipes sp	6	2.608	5.236	0.257	13.277	90	.
22	Eukiefferiella sp	0						
23	Gammarus fasciatus	28	4.64	10.783	0.202	46.083	90	8.947
24	Glossiphonia heteroclita	1	0.392		0.392	0.392	90	.
25	Glossosoma sp	3	16.035	8.792	8.953	25.875	90	.
26	Glyptotendipes sp	6	0.835	1.297	0.257	3.482	90	.
27	Gyraulus parvus	1	0.334		0.334	0.334	90	.
28	Helisoma anceps	0						
29	Heterotrissocladius sp	0						
30	Hyaella azteca	13	11.368	24.392	1.271	92.105	90	58.996
31	Hydropsyche sp	0						
32	Hydroptila sp	0						
33	Ilyodrilus templetoni	0						
34	Limnodrilus hoffmeisteri	0						
35	Limnodrilus sp	59	7.869	12.726	0.202	56.818	90	26.173
36	Limnodrilus udekemianus	1	22.145		22.145	22.145	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	3	0.335	0.057	0.278	0.392	90	.
39	Microtendipes sp	10	0.319	0.099	0.219	0.556	90	0.539
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	0						
43	Nais variabilis	0						
44	Nanocladius sp	0						
45	Neureclipsis sp	0						
46	Oecetis sp	11	0.397	0.252	0.219	1.087	90	0.981
47	Parachironomus sp	0						
48	Paralauterborniella sp	0						
49	Paratendipes sp	0						
50	Phaenopsectra sp	4	17.313	7.455	8.953	24.876	90	.
51	Phallodrilus sp	0						
52	Physella gyrina	0						

53	<i>Piguetiella michiganensi</i>	0						
54	<i>Pisidium casertanum</i>	0						
55	<i>Pisidium compressum</i>	0						
56	<i>Pisidium conventus</i>	0						
57	<i>Pisidium fallax</i>	0						
58	<i>Pisidium henslowanum</i>	0						
59	<i>Pisidium lilljeborgi</i>	1	92.105		92.105	92.105	90	.
60	<i>Pisidium nitidum</i>	1	2.249		2.249	2.249	90	.
61	<i>Pisidium variabile</i>	0						
62	<i>Pleurocera acuta</i>	0						
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	21	7.546	8.943	0.272	27.143	90	24.951
65	<i>Pontoporeia hoyi</i>	0						
66	<i>Potamothrix moldaviensis</i>	0						
67	<i>Potamothrix vejdoskyi</i>	0						
68	<i>Pristina foreli</i>	0						
69	<i>Pristina osborni</i>	0						
70	<i>Procladius</i> sp	45	9.198	13.612	0.202	56.818	90	26.561
71	<i>Prostoma rubrum</i>	0						
72	<i>Pseudocloeon</i> sp	0						
73	<i>Quistadrilus multisetosus</i>	0						
74	<i>Slavina appendiculata</i>	0						
75	<i>Specaria josinae</i>	0						
76	<i>Sphaerium nitidum</i>	0						
77	<i>Sphaerium striatinum</i>	0						
78	<i>Spirosperma ferox</i>	0						
79	<i>Stenonema</i> sp	0						
80	<i>Stictochironomus</i> sp	2	0.474	0.115	0.392	0.556	90	.
81	<i>Stylaria lacustris</i>	3	34.729	49.69	6.04	92.105	90	.
82	<i>Stylodrilus heringianus</i>	1	1.923		1.923	1.923	90	.
83	<i>Tanytarsus</i> sp	2	1.436	1.646	0.272	2.6	90	.
84	<i>Thienemannimyia</i> sp	0						
85	<i>Tubifex</i> sp	36	10.607	14.846	0.257	56.818	90	35.032
86	<i>Turbellaria</i>	0						
87	<i>Uncinaxis uncinata</i>	0						
88	<i>Valvata sincera</i>	1	0.334		0.334	0.334	90	.
89	<i>Valvata tricarinata</i>	9	10.567	30.577	0.219	92.105	90	.
90	<i>Vejdoskyella intermedia</i>	0						
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	4	2.49	1.408	1.271	3.709	90	.
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	12	1.423	2.171	0.202	6.04	90	6.04
97	<i>Hexagenia limbata</i>	2	25.875	28.578	5.668	46.083	90	.
98	<i>Hexagenia</i> sp	0						
99	<i>Tanytus</i> sp	0						
100	<i>Tubifex tubifex</i>	0						

Table 12d: PCB-1260 - Species Screening Level Concentrations (ug/g of organic carbon).

Spp No.	Species	N=	Mean	Std.Dev.	Minimum	Maximum	%	Conc.
1	Ablabesmyia sp	6	10.018	3.346	3.511	12.451	90	.
2	Aelosoma sp	0						
3	Amnicola limosa	1	0.314		0.314	0.314	90	.
4	Asellus sp	16	4.937	13.183	0.04	52.74	90	24.538
5	Aulodrilus limnobius	0						
6	Aulodrilus pigueti	0						
7	Aulodrilus pleuriseta	0						
8	Bithynia tentaculata	9	0.207	0.172	0.04	0.556	90	.
9	Branchiura sowerbyi	6	9.278	21.298	0.169	52.74	90	.
10	Caenis sp	3	5.362	8.997	0.065	15.75	90	.
11	Ceraclea sp	0						
12	Chaetogaster diaphanus	0						
13	Cheumatopsyche sp	0						
14	Chironomus sp	31	1.743	6.861	0.04	38.462	90	2.282
15	Cladopelma sp	0						
16	Cladotanytarsus sp	0						
17	Coelotanytus sp	5	0.583	0.903	0.065	2.185	90	.
18	Cricotopus sp	12	4.116	4.534	0.064	12.451	90	12.05
19	Cricotopus vierriensis	0						
20	Cryptochironomus sp	17	5.053	13.061	0.04	52.74	90	23.148
21	Dicrotendipes sp	6	2.175	5.036	0.051	12.451	90	.
22	Eukiefferiella sp	0						
23	Gammarus fasciatus	29	4.346	11.962	0.04	52.74	90	15.75
24	Glossiphonia heteroclita	1	0.078		0.078	0.078	90	.
25	Glossosoma sp	3	9.38	5.085	3.511	12.451	90	.
26	Glyptotendipes sp	6	1.837	4.349	0.051	10.714	90	.
27	Gyraulus parvus	1	0.067		0.067	0.067	90	.
28	Helisoma anceps	0						
29	Heterotrissocladius sp	0						
30	Hyalella azteca	13	1.782	2.256	0.064	6.579	90	5.766
31	Hydropsyche sp	0						
32	Hydroptila sp	0						
33	Ilyodrilus templetoni	0						
34	Limnodrilus hoffmeisteri	0						
35	Limnodrilus sp	60	4.007	8.865	0.04	52.74	90	11.558
36	Limnodrilus udekemianus	1	9.217		9.217	9.217	90	.
37	Lumbriculus variegatus	0						
38	Manayunkia speciosa	3	0.067	0.011	0.056	0.078	90	.
39	Microtendipes sp	10	0.126	0.159	0.048	0.556	90	0.522
40	Mystacides sp	0						
41	Nais behningi	0						
42	Nais communis	0						
43	Nais variabilis	0						
44	Nanocladius sp	0						
45	Neureclipsis sp	0						
46	Oecetis sp	11	0.195	0.183	0.048	0.556	90	0.54
47	Parachironomus sp	0						
48	Paralauterborniella sp	0						
49	Paratendipes sp	0						
50	Phaenopsectra sp	4	8.685	3.742	3.511	12.451	90	.
51	Phallodrilus sp	0						
52	Physella gyrina	0						

53	<i>Piguetiella michiganensi</i>	0						
54	<i>Pisidium casertanum</i>	0						
55	<i>Pisidium compressum</i>	0						
56	<i>Pisidium conventus</i>	0						
57	<i>Pisidium fallax</i>	0						
58	<i>Pisidium henslowanum</i>	0						
59	<i>Pisidium lilljeborgi</i>	1	6.579		6.579	6.579	90	.
60	<i>Pisidium nitidum</i>	1	0.296		0.296	0.296	90	.
61	<i>Pisidium variabile</i>	0						
62	<i>Pleurocera acuta</i>	0						
63	<i>Polypedilum scalaenum</i>	0						
64	<i>Polypedilum</i> sp	21	4.576	5.463	0.056	15.75	90	12.279
65	<i>Pontoporeia hoyi</i>	0						
66	<i>Potamothrix moldaviensis</i>	0						
67	<i>Potamothrix vejdvskyi</i>	0						
68	<i>Pristina foreli</i>	0						
69	<i>Pristina osborni</i>	0						
70	<i>Procladius</i> sp	46	2.441	3.953	0.04	12.451	90	11.194
71	<i>Prostoma rubrum</i>	0						
72	<i>Pseudocloeon</i> sp	0						
73	<i>Quistadrilus multisetosus</i>	0						
74	<i>Slavina appendiculata</i>	0						
75	<i>Specaria josinae</i>	0						
76	<i>Sphaerium nitidum</i>	0						
77	<i>Sphaerium striatinum</i>	0						
78	<i>Spirosperma ferox</i>	0						
79	<i>Stenonema</i> sp	0						
80	<i>Stictochironomus</i> sp	2	0.317	0.337	0.078	0.556	90	.
81	<i>Stylaria lacustris</i>	3	2.417	3.605	0.336	6.579	90	.
82	<i>Stylodrilus heringianus</i>	1	1.923		1.923	1.923	90	.
83	<i>Tanytarsus</i> sp	2	0.303	0.044	0.272	0.333	90	.
84	<i>Thienemannimyia</i> sp	0						
85	<i>Tubifex</i> sp	36	4.327	7.349	0.051	38.462	90	11.847
86	<i>Turbellaria</i>	0						
87	<i>Uncinatis uncinata</i>	0						
88	<i>Valvata sincera</i>	1	0.067		0.067	0.067	90	.
89	<i>Valvata tricarinata</i>	9	0.898	2.137	0.051	6.579	90	.
90	<i>Vejdvskyella intermedia</i>	0						
91	<i>Elliptio complanata</i>	0						
92	<i>Sphaerium simile</i>	0						
93	<i>Chironomus plumosus</i>	4	0.069	0.006	0.064	0.074	90	.
94	<i>Cricotopus bicinctus</i>	0						
95	<i>Ephemera</i> sp	0						
96	<i>Helobdella stagnalis</i>	13	0.545	0.815	0.04	2.188	90	2.187
97	<i>Hexagenia limbata</i>	2	1.253	1.486	0.202	2.304	90	.
98	<i>Hexagenia</i> sp	0						
99	<i>Tanytus</i> sp	0						
100	<i>Tubifex tubifex</i>	0						

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APPENDIX II - FIGURES

Calculation of the 5th and 95th Percentiles of the Species Screening Level Concentrations

- Concentrations are expressed on the basis of unit mass per mass of organic carbon.
- Species numbers correspond to those in the tables in Appendix I

Fig 1. SLC Graph For Aldrin

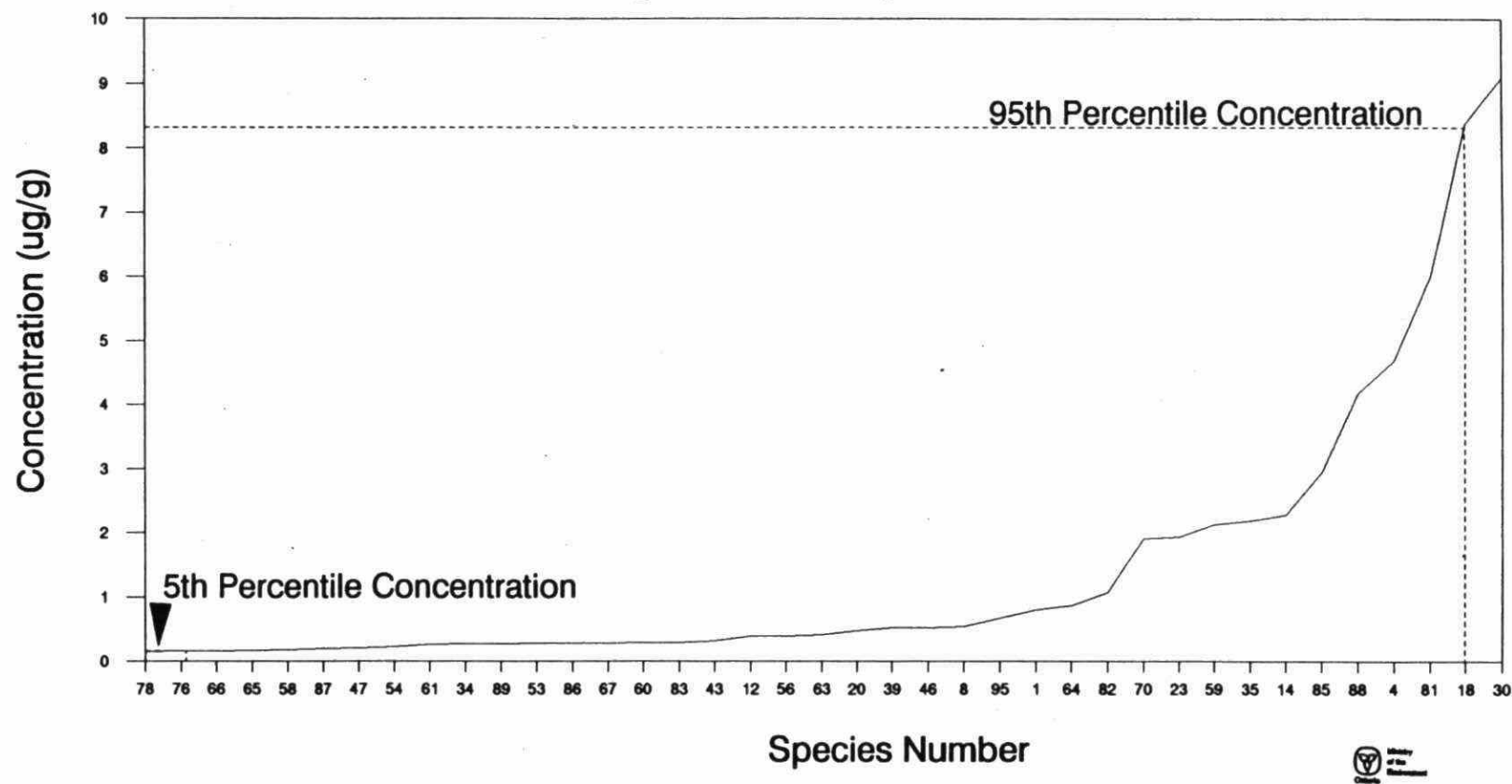


Fig 2. SLC Graph For Total Benzene Hexachloride (BHC)

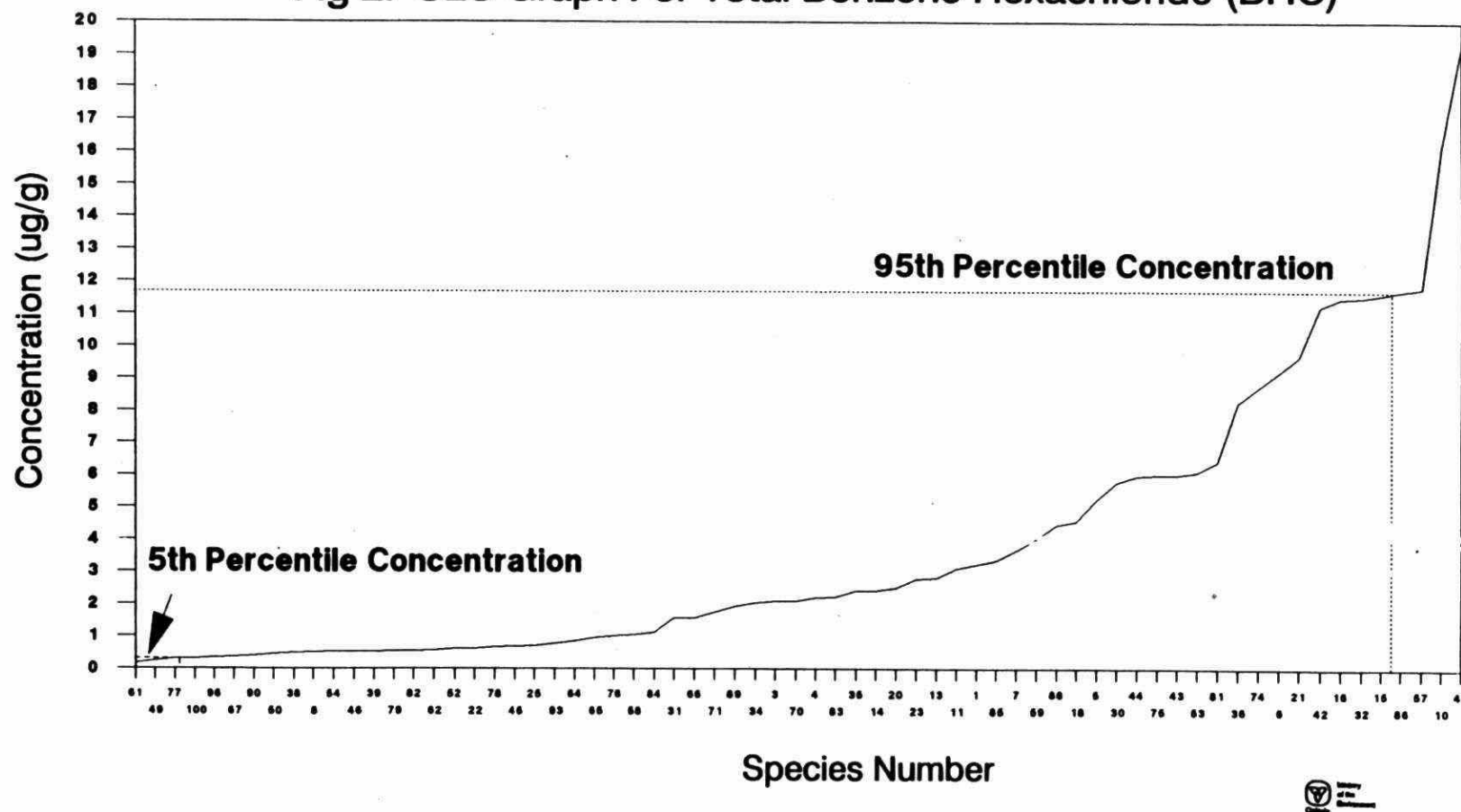


Fig 2a. SLC Graph For α -BHC

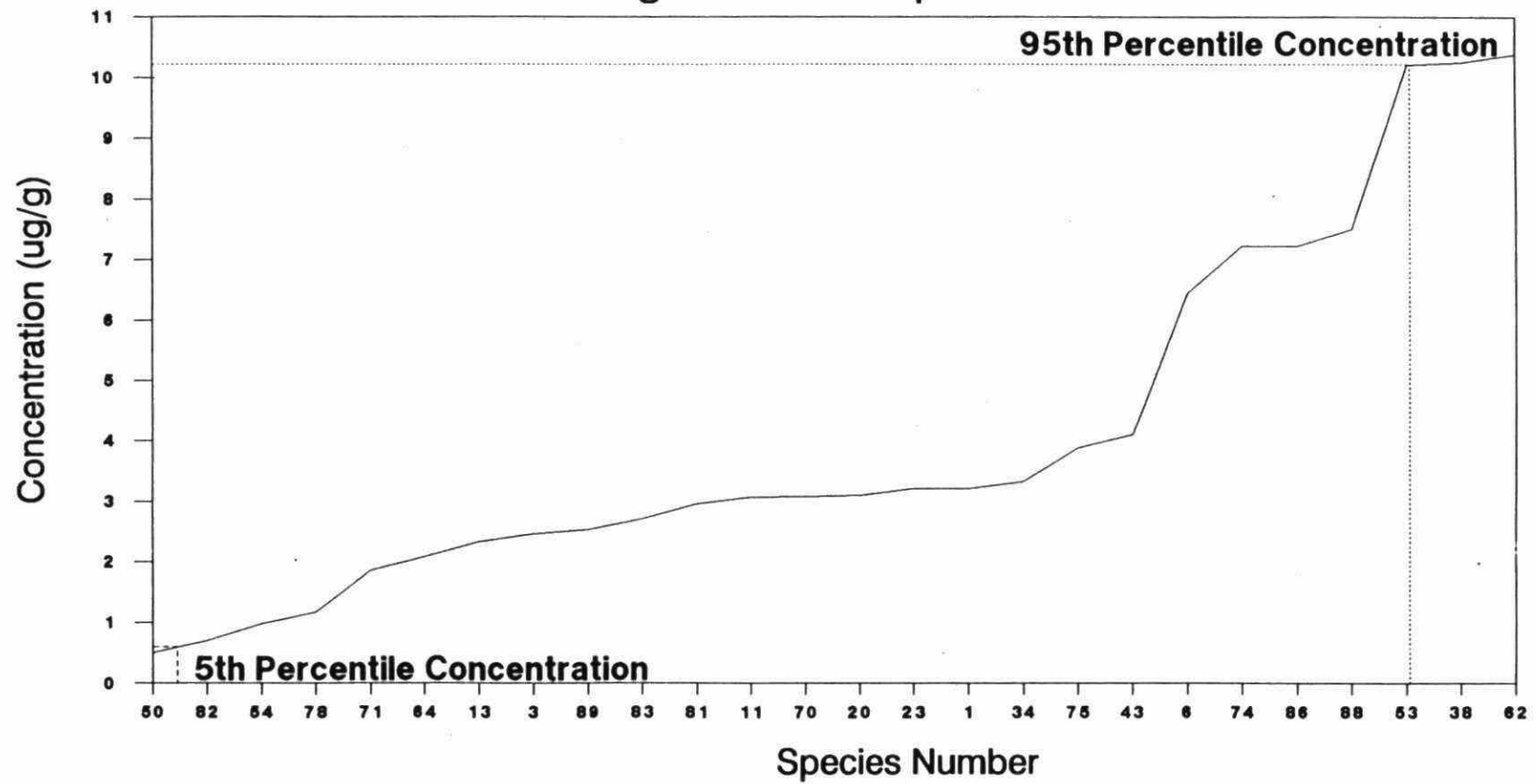


Fig 2b. SLC Graph For β -BHC

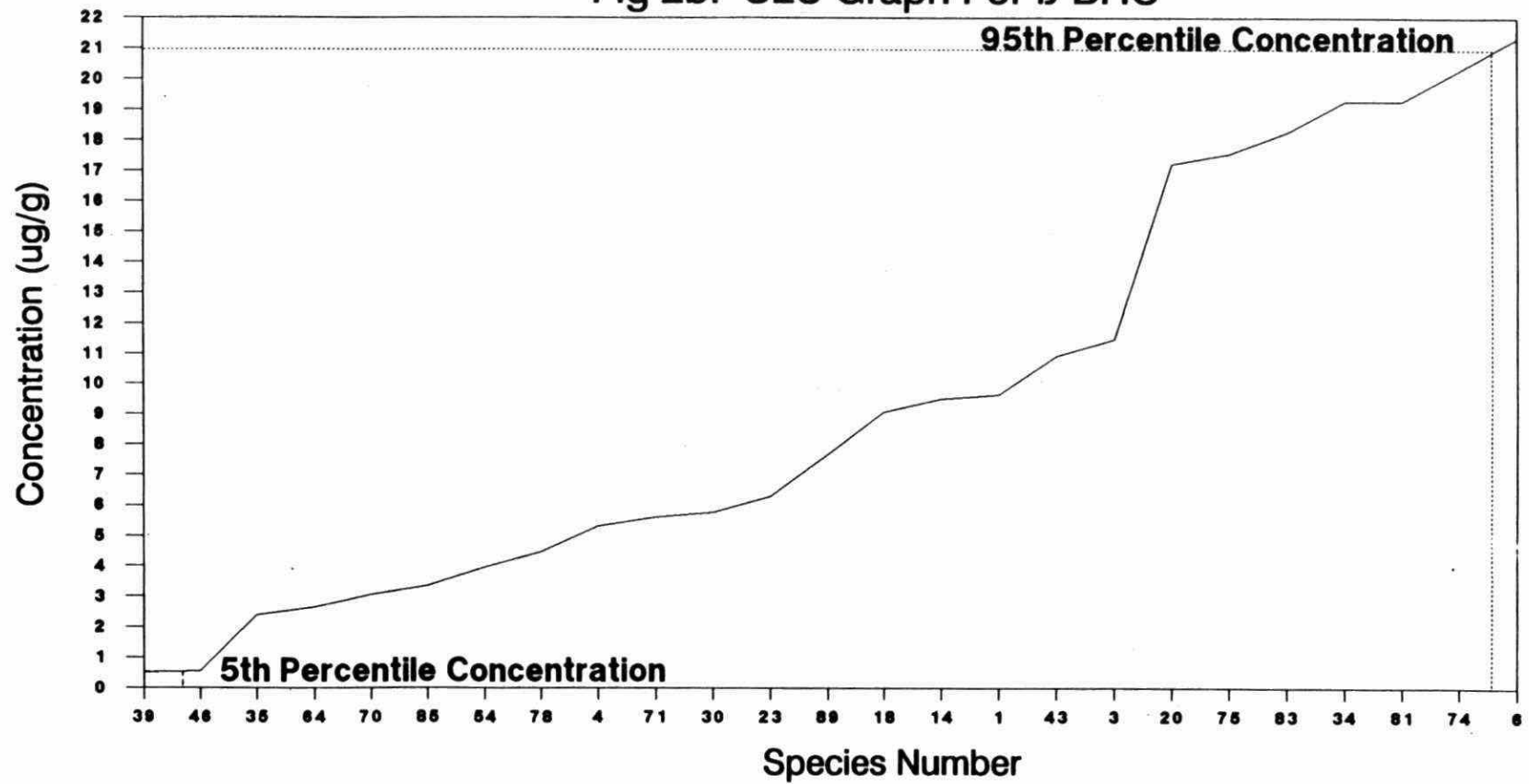


Fig 2c. SLC Graph For α -BHC

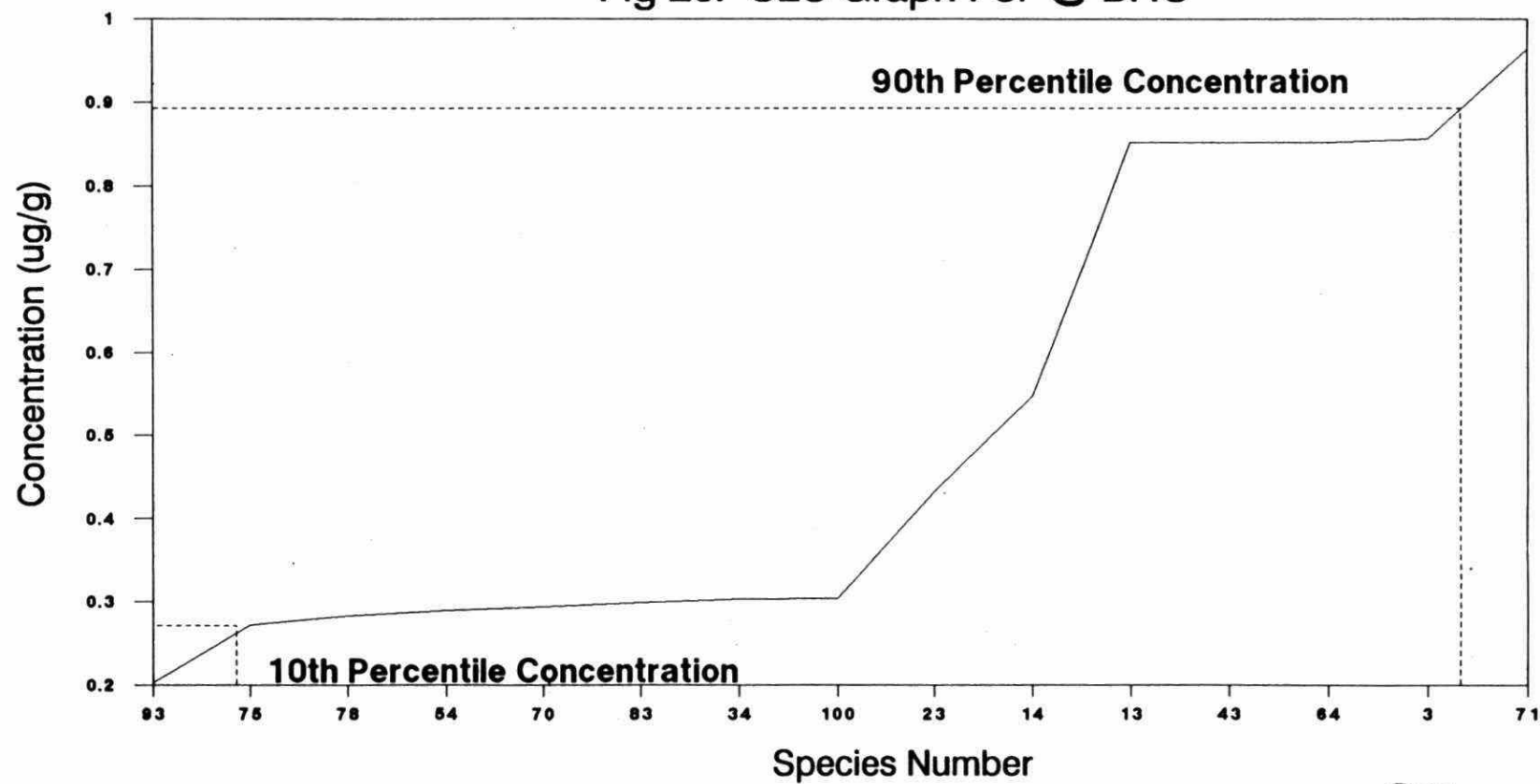


Fig 3. SLC Graph For Chlordane

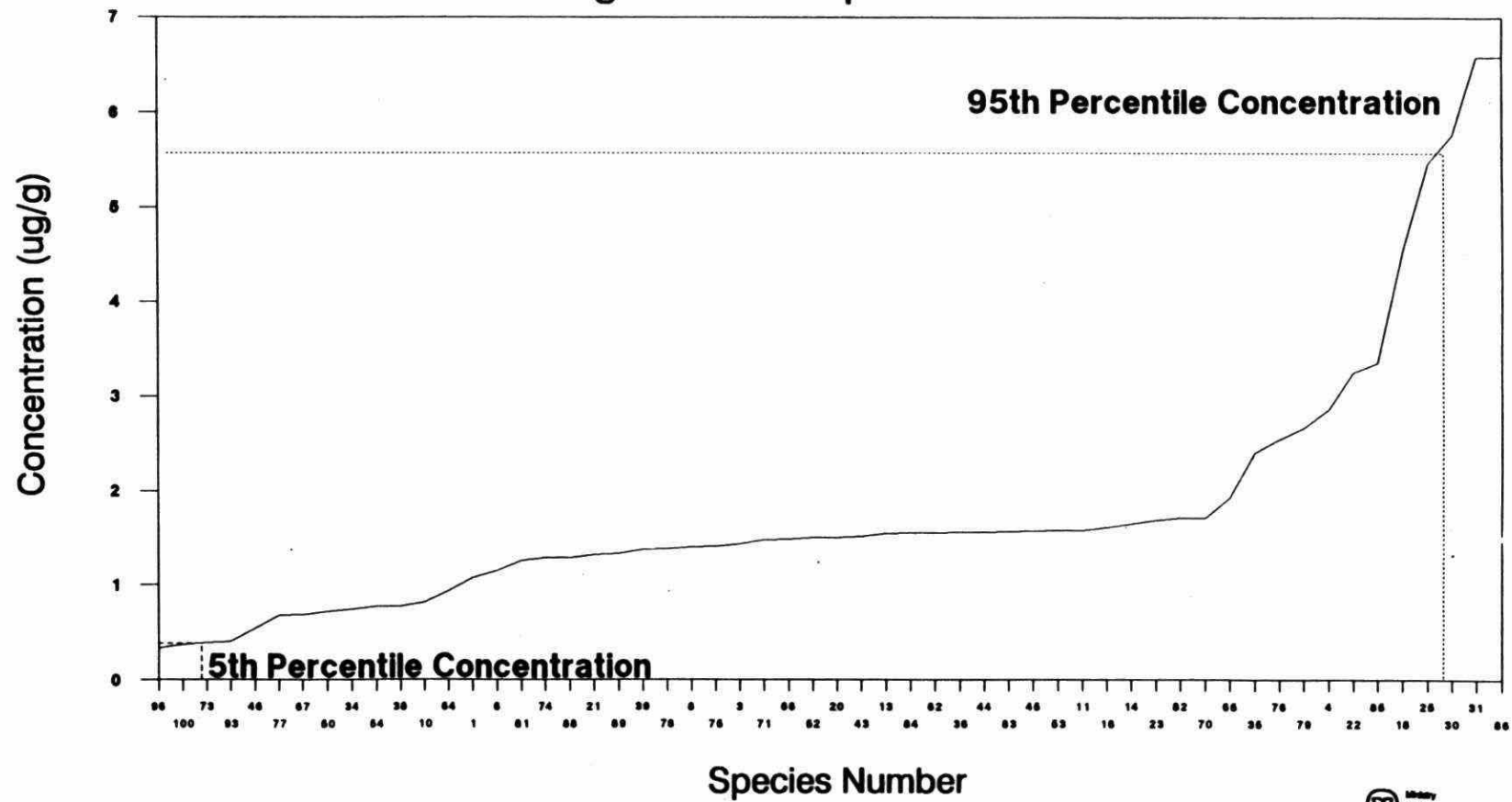


Fig 4. SLC Graph For Total DDT

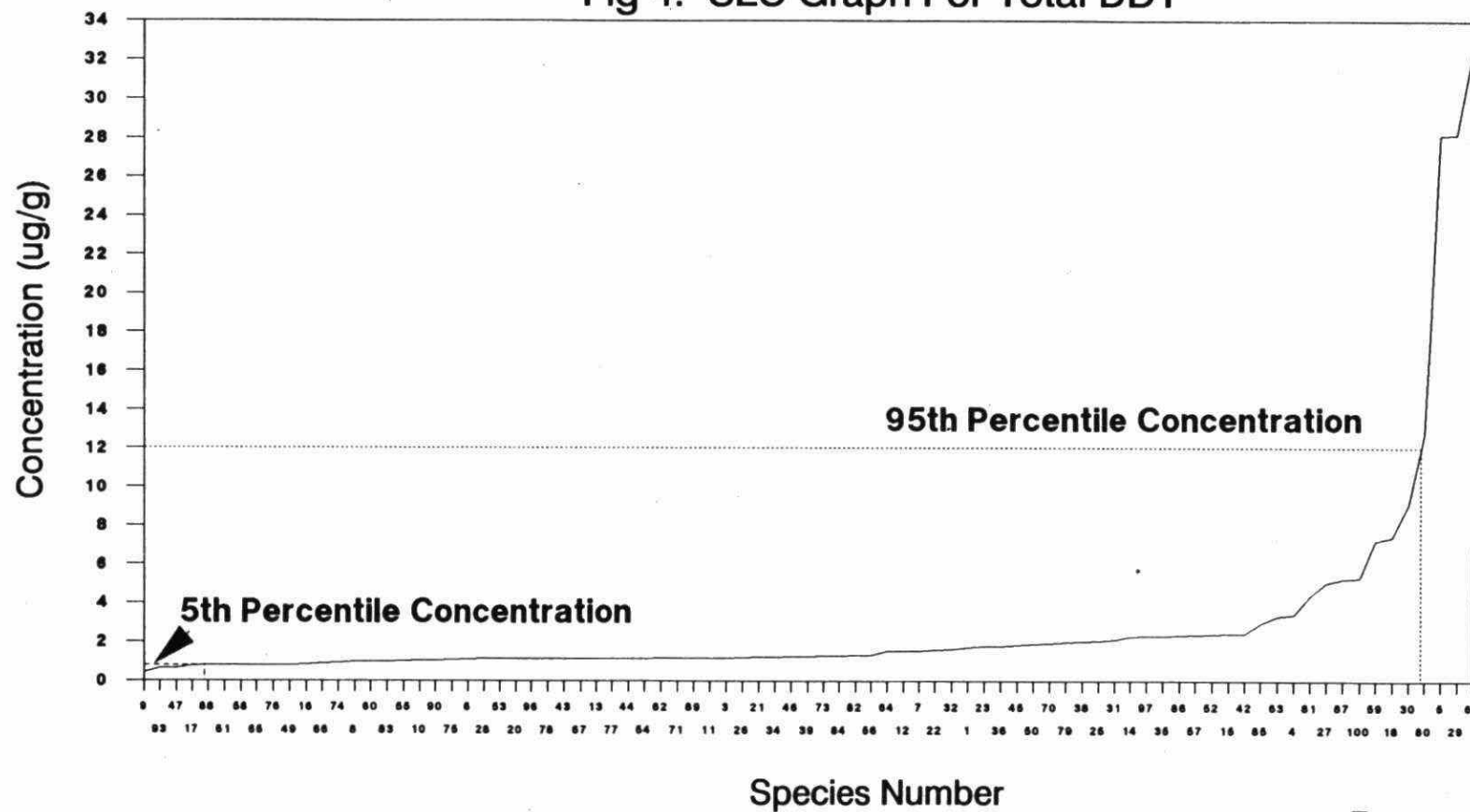


Fig. 4a. SLC Graph for o,p' + p,p' -DDT

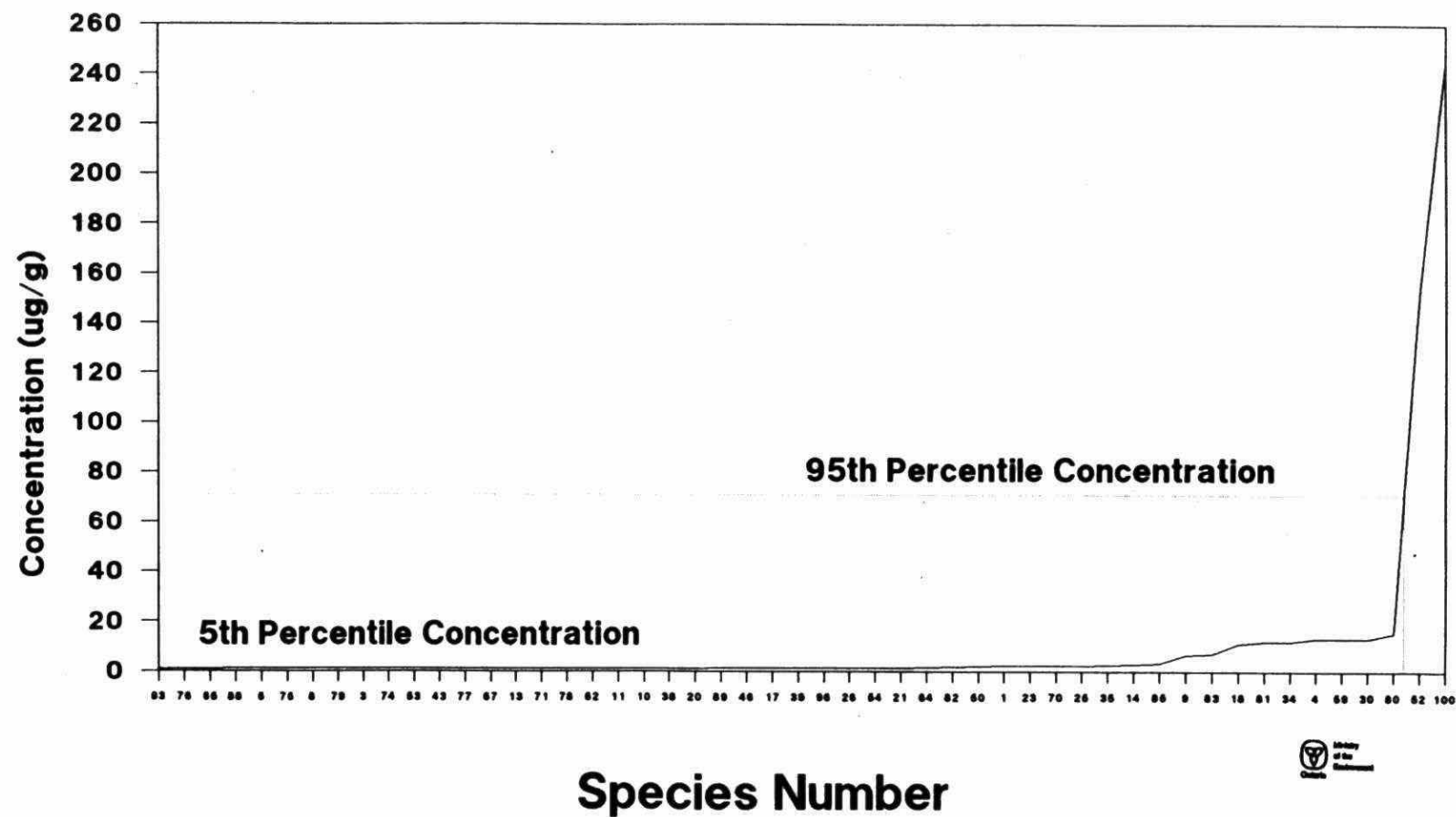


Fig 5. SLC Graph For p,p'-DDD

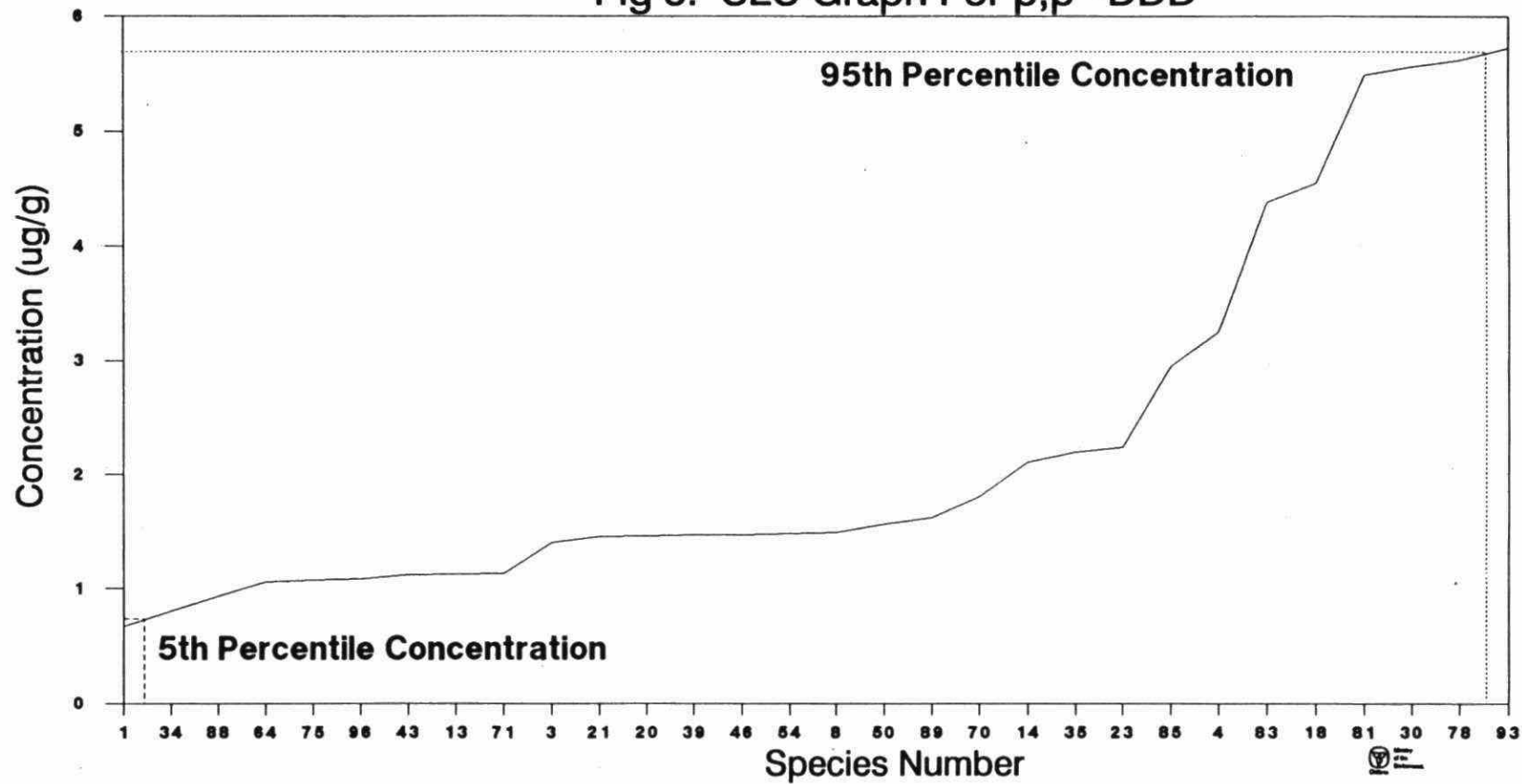


Fig 6. SLC Graph For p,p'-DDE

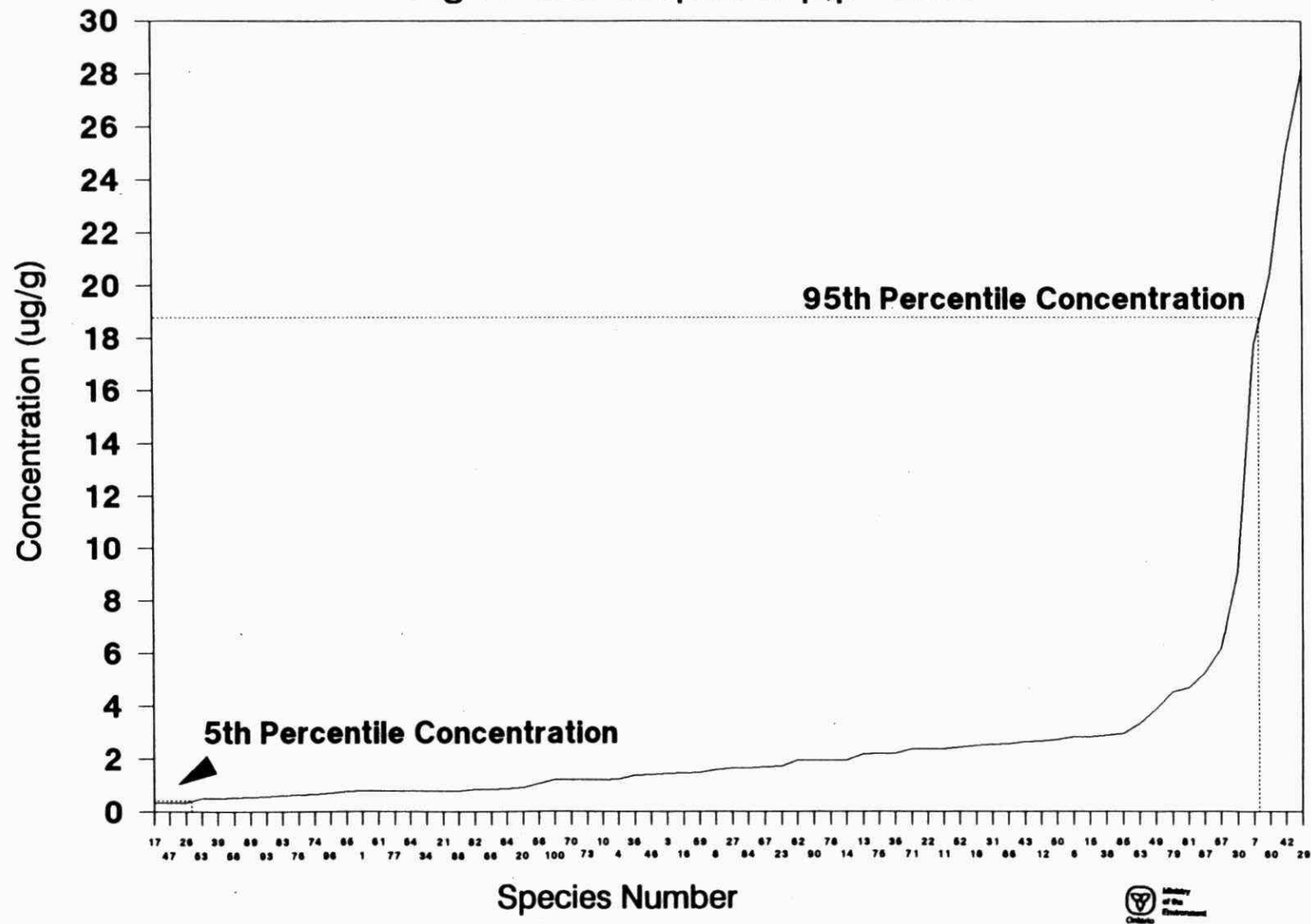


Fig 7. SLC Graph For Dieldrin

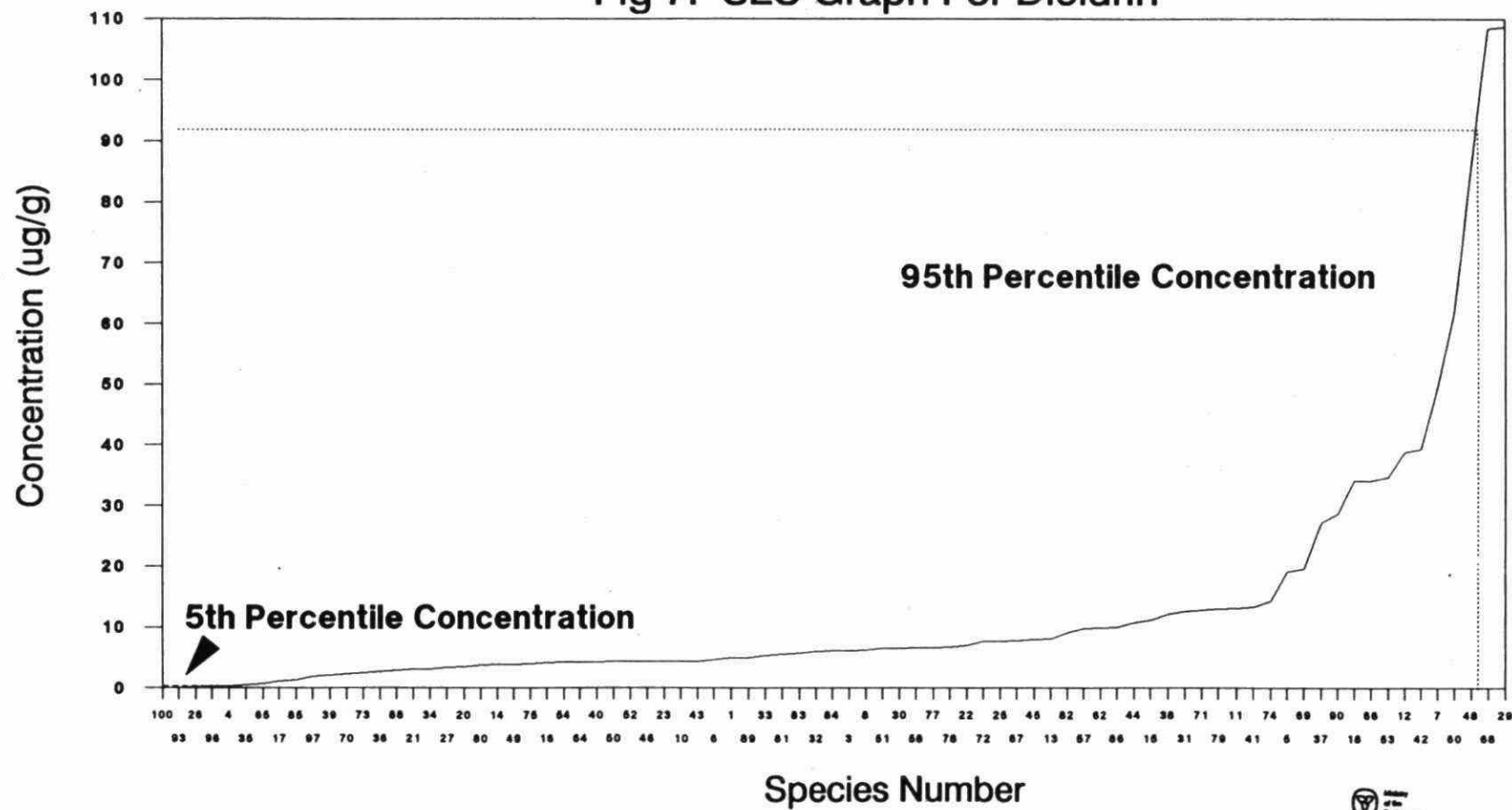


Fig 8. SLC Graph For Endrin

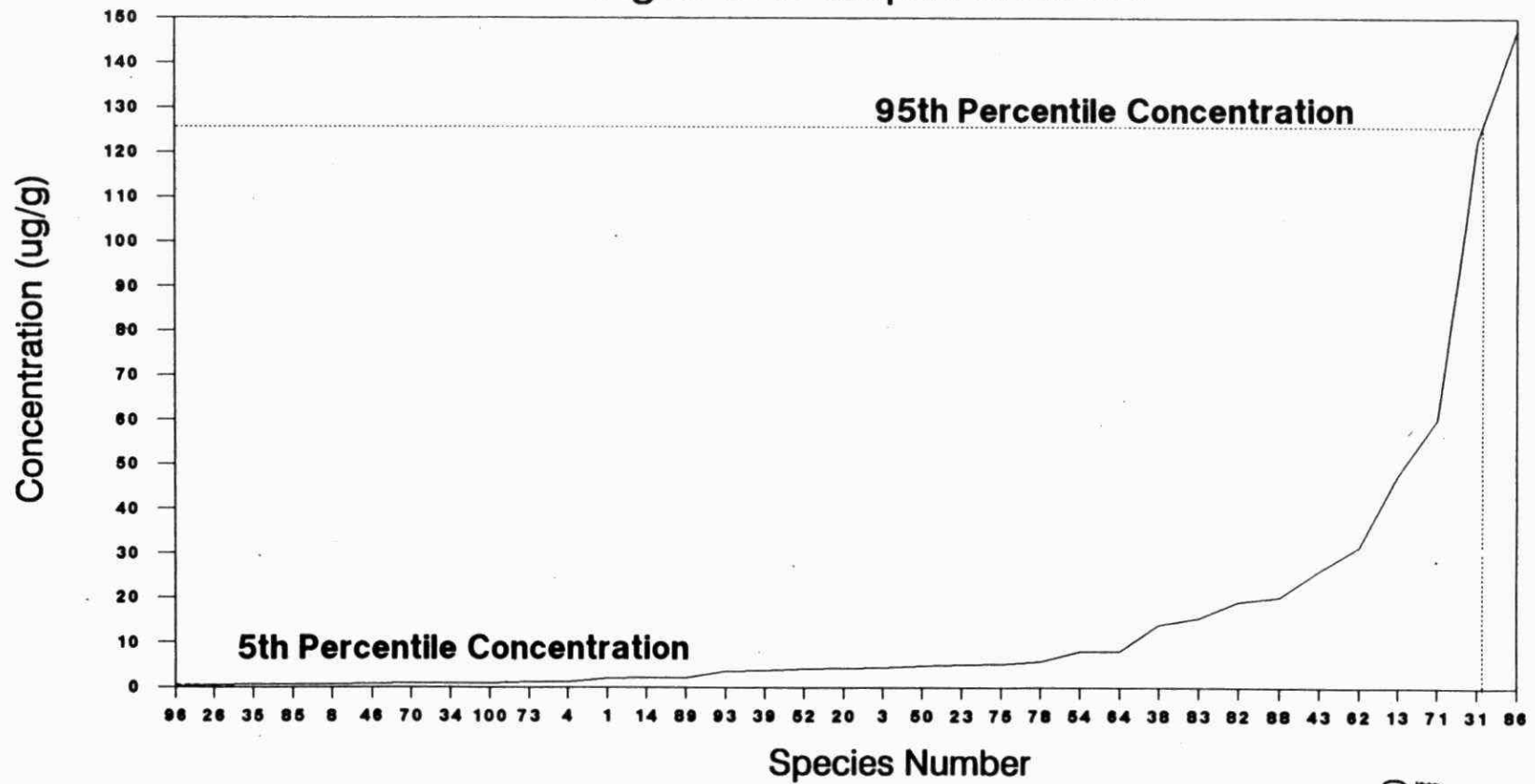


Fig 10. SLC Graph For Heptachlor Epoxide

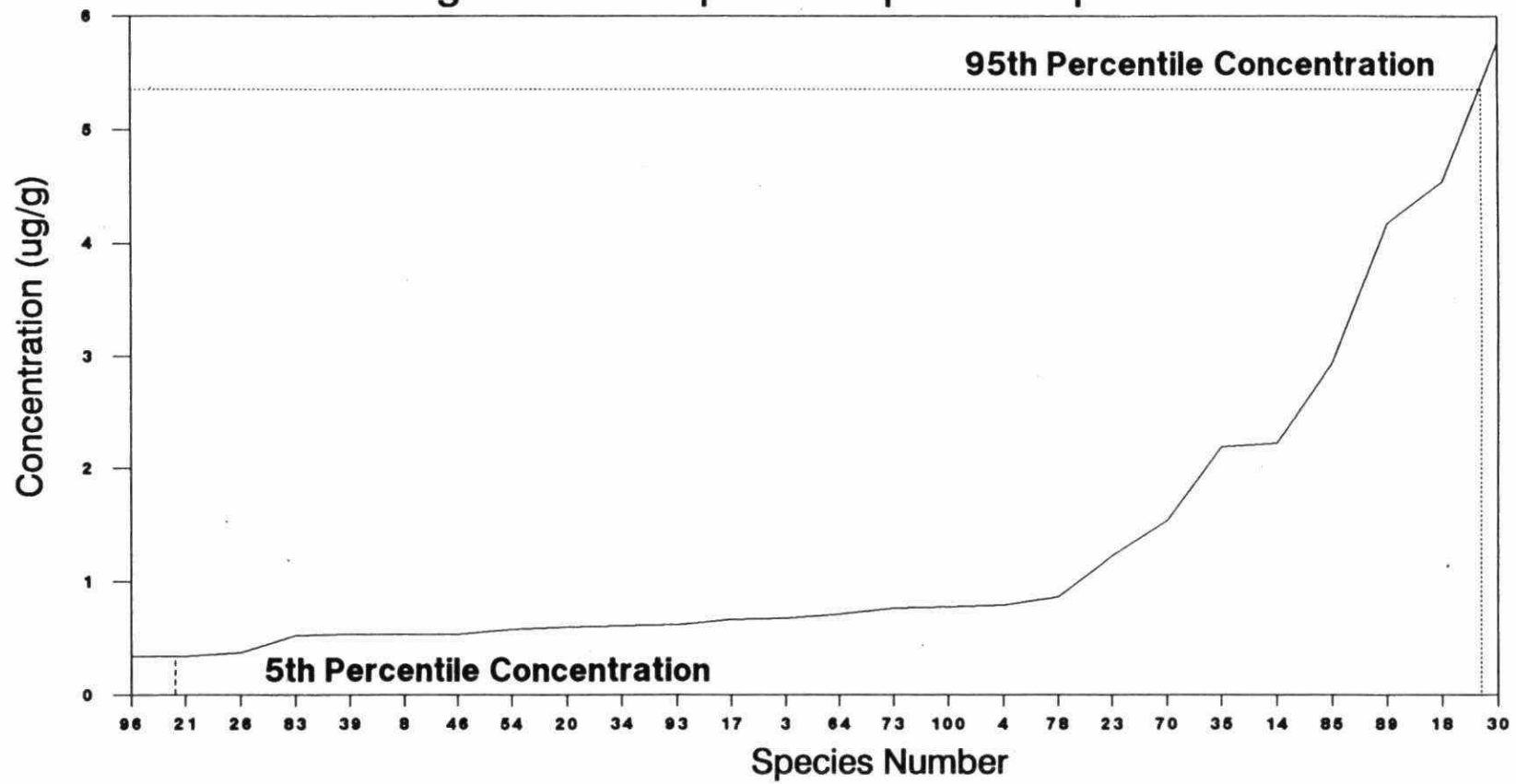


Fig 9. SLC Graph For Hexachlorobenzene (HCB)

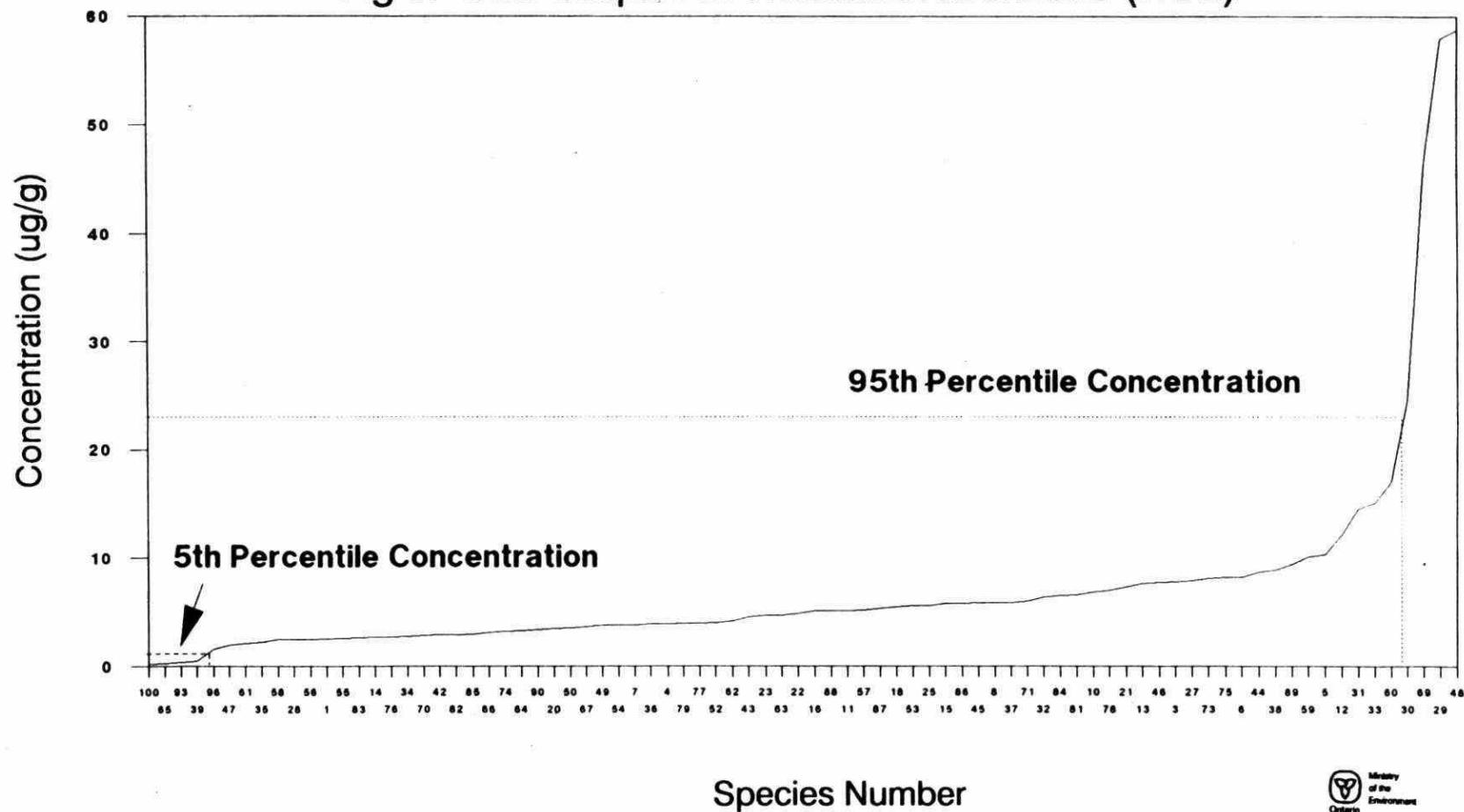


Fig 11. SLC Graph For Mirex

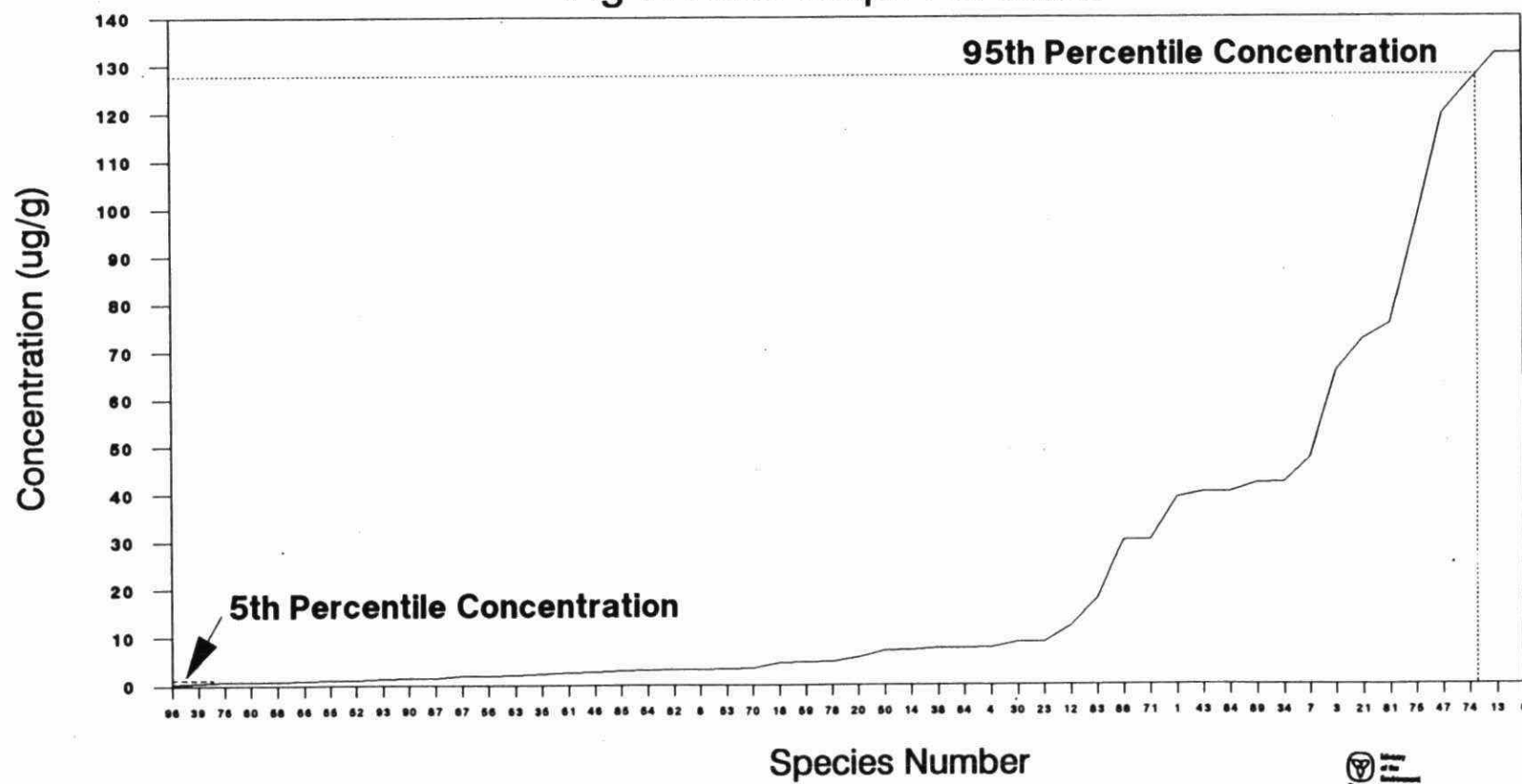


Fig 12. SLC Graph For Total PCB

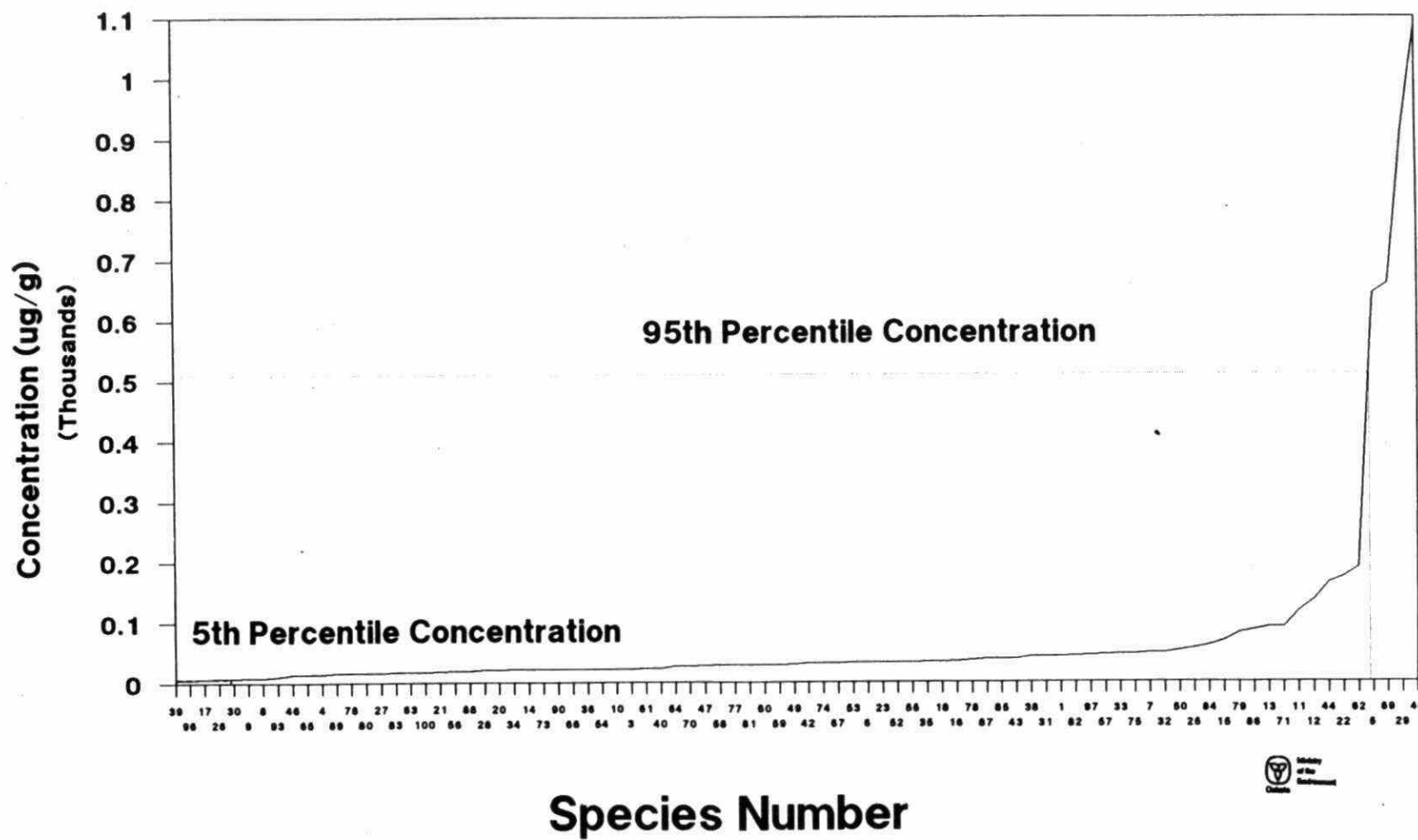


Fig 12a. SLC Graph For PCB-1254

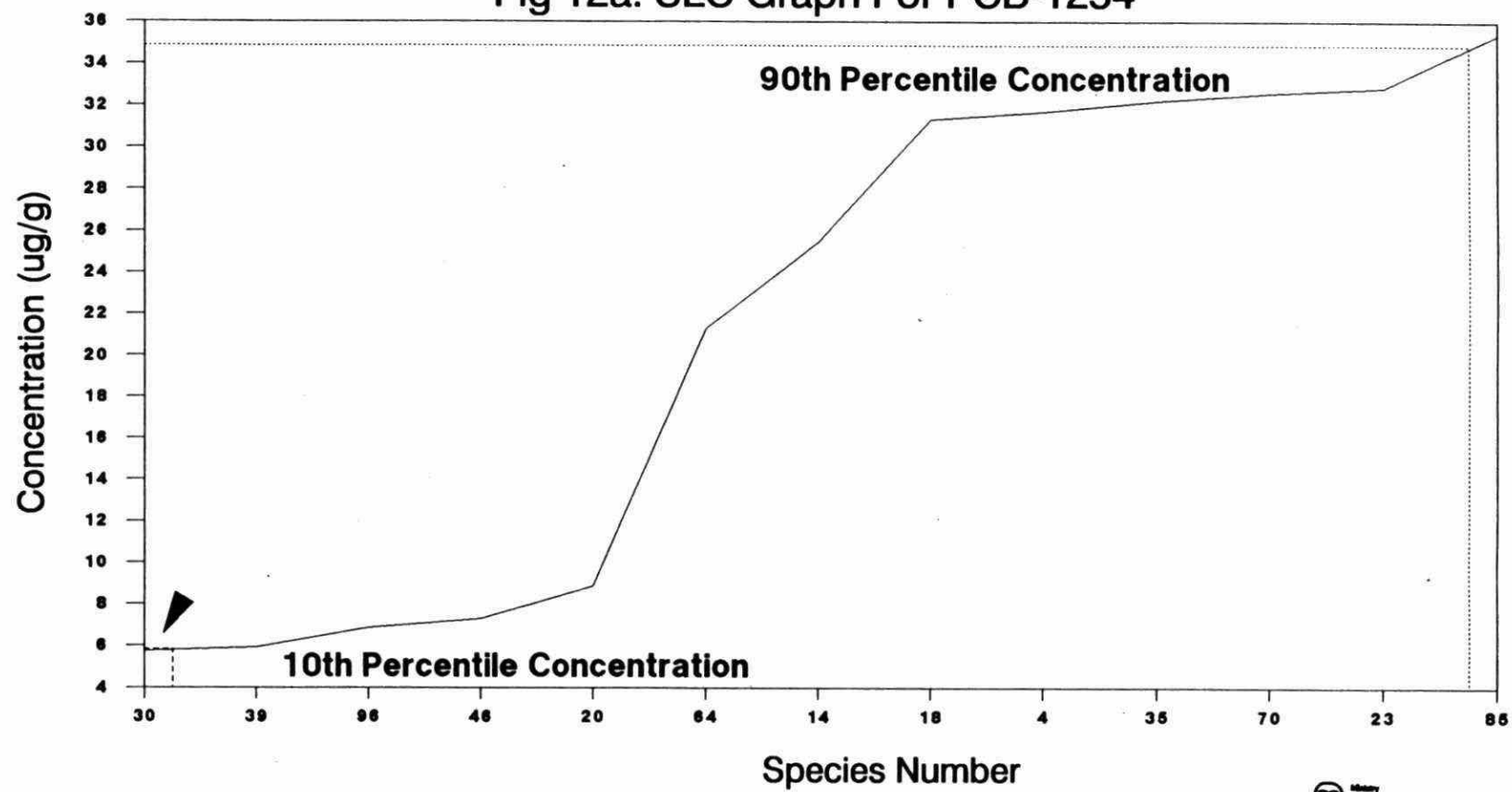


Fig 12b. SLC Graph For PB-1016

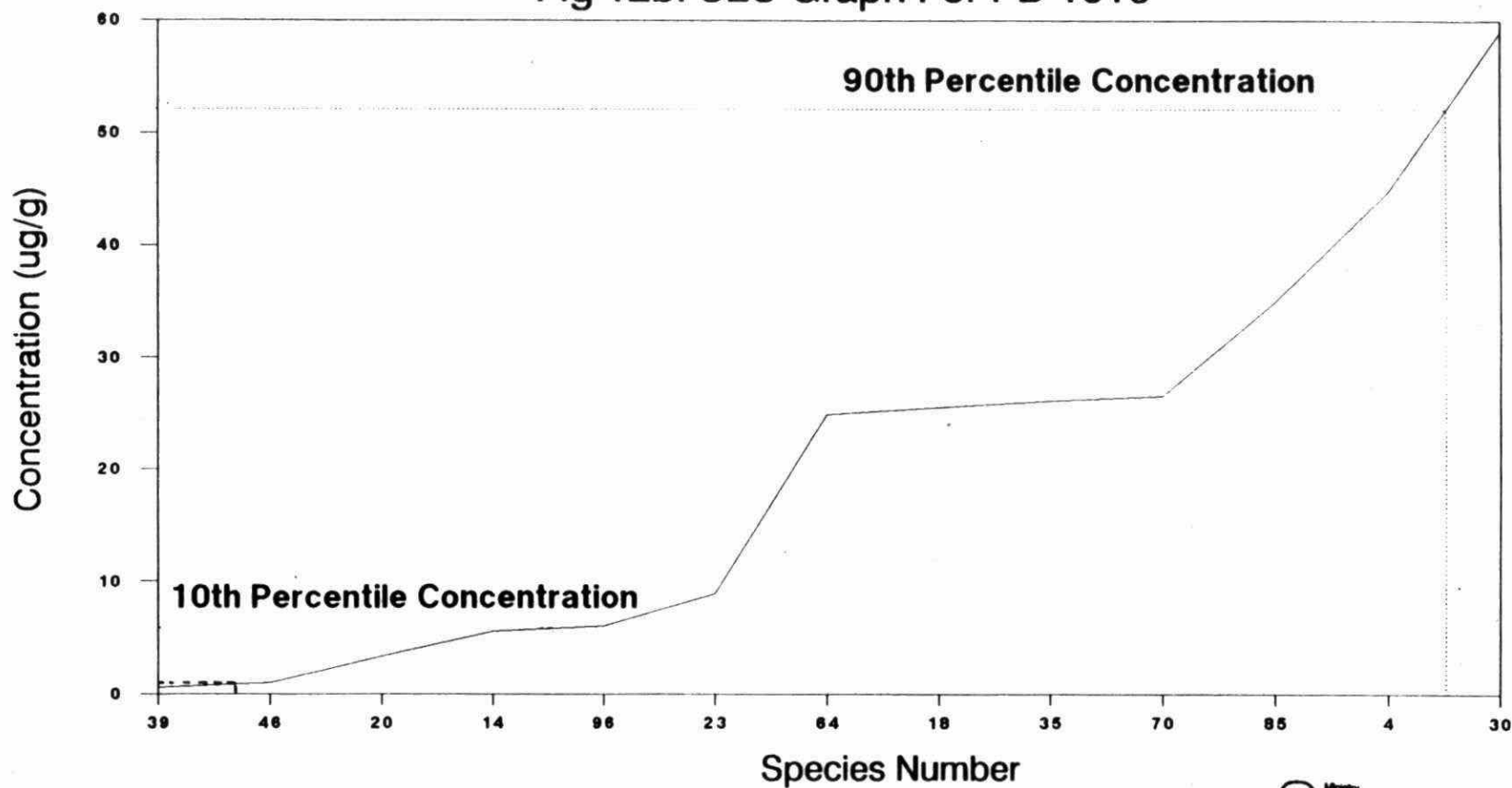


Fig 12c. SLC Graph For PCB-1248

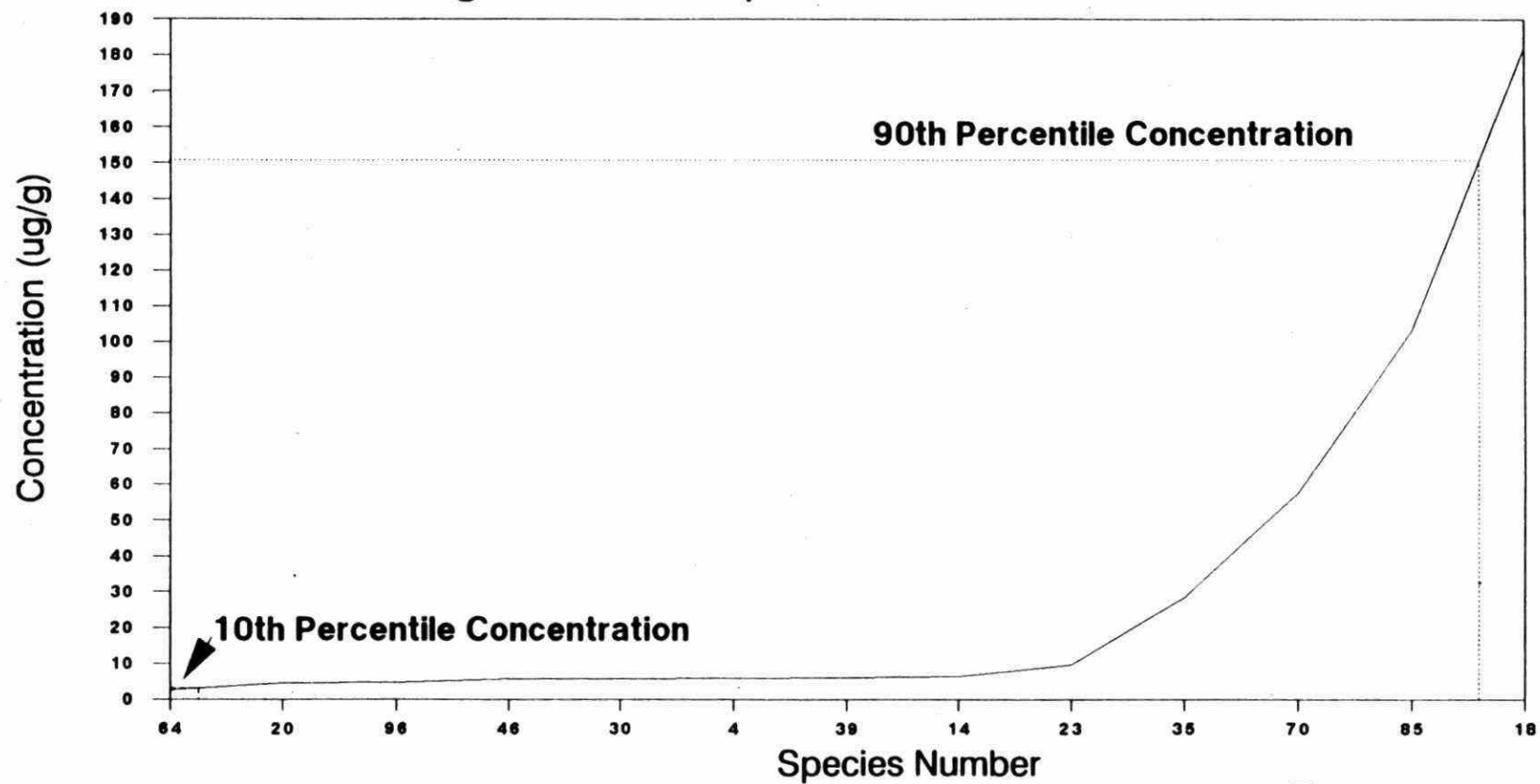
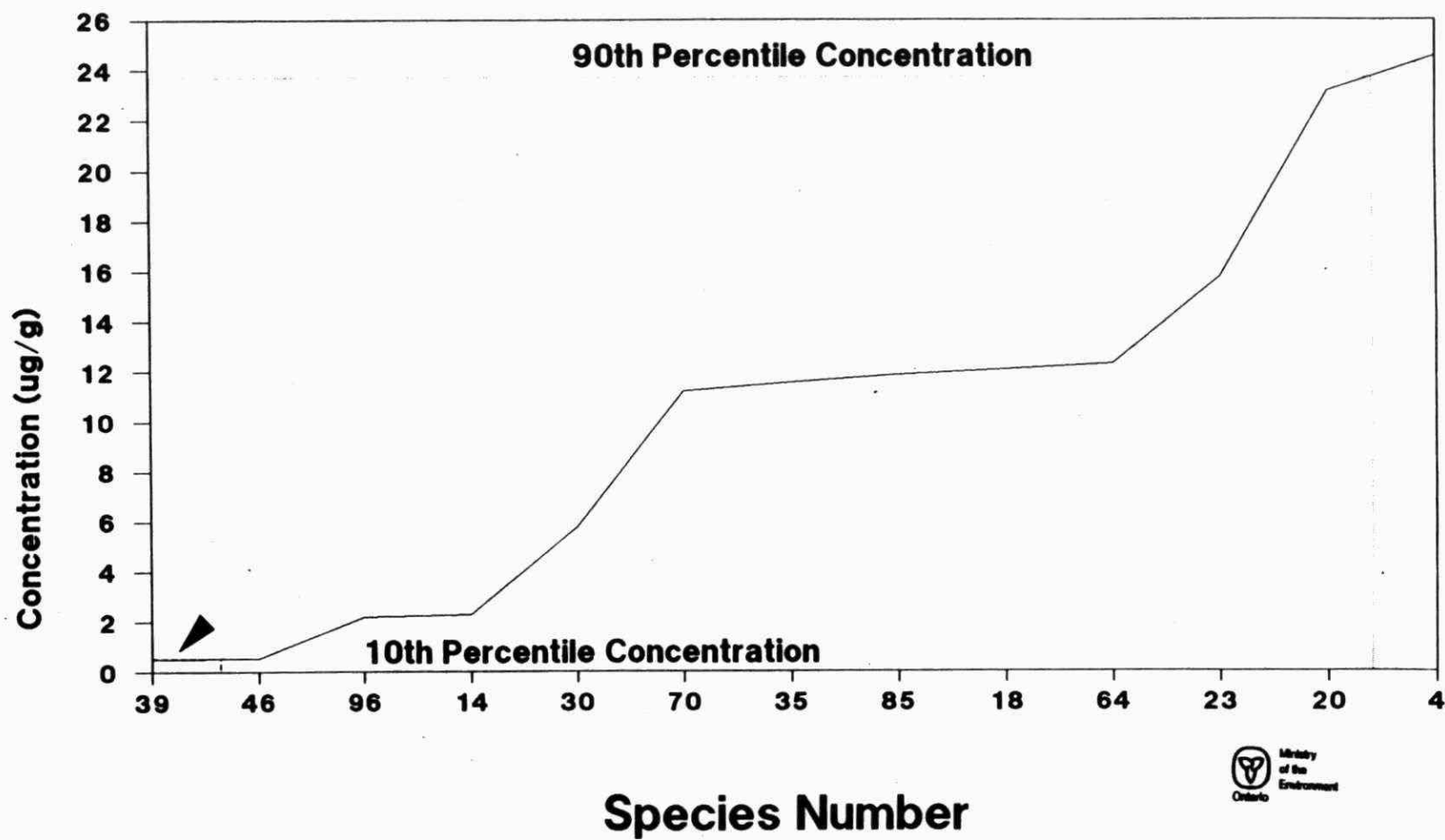


Fig 12d. SLC Graph For PCB-1260



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